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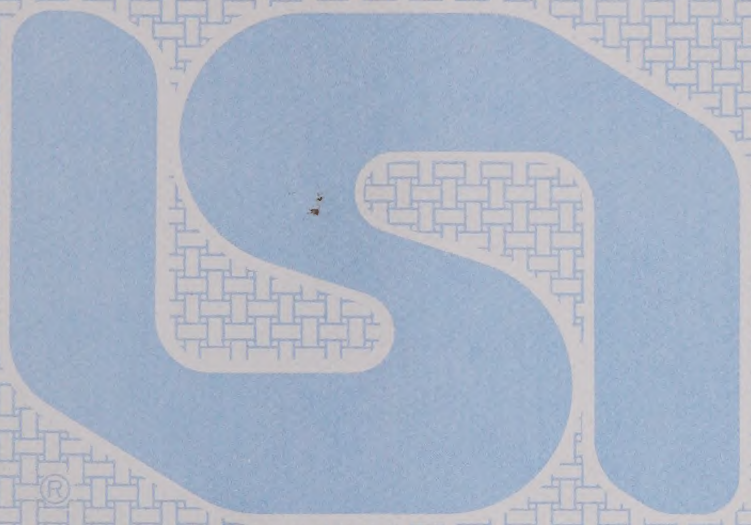

808A
808B
808A-11

VOICE FREQUENCY TEST SET

MAINTENANCE MANUAL

LSI/Sierra 808A Voice Frequency Test Set

This Maintenance Manual provides information for service and calibration center use. It is suggested that the instrument be calibrated on an annual basis, depending upon conditions and user requirements.

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B025808A0A

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1. FUNCTIONAL DESCRIPTION

1.01 The 808A primarily consists of a variable VF oscillator, a LEVEL/NOISE/FREQUENCY meter, an LED Display, and an Audio Frequency monitor, all of which are controlled by a microprocessor, otherwise known as a Central Processing Unit (CPU). The microprocessor (CPU) performs many of the test functions such as controlling all measurement ranging and performing the calculations and conversions necessary for the digital display. The CPU communicates with all analog circuitry via interface modules (FUNCTION, SIGNAL, OSCILLATOR, and DISPLAY interface modules) connected to the DATA BUS as well as the A/D converter and the prescaler. Through the DATA BUS, the CPU has access to its memory storage devices; the Read-Only Memory (ROM) where the computer program instructions are stored, and the Random Access Memory (RAM) which serves as a "scratch pad" to store test results and calculations. Since the bus is shared by all devices within the microcomputer, the Central Processing unit controls the on/off status of each device.

VF SIGNAL GENERATOR/TRANSMITTER

1.02 The VF signal generator produces a swept VF range (see individual specifications) in steps of 100 and 200 Hz when the set is in AUTO SWP mode, with automatic repeat. A manual interrupt is provided on the test set to hold (SWP HOLD) any particular output frequency, but as soon as the "hold" is released (AUTO SWP) the next sequential frequency is transmitted and the timed frequency step sequence is resumed. (Provision is made on the 808B to manually "fast" sweep the transmitter frequency at the rate of two frequency tones per second using the SELF-TEST/MAN. STEP button). The digital display provides immediate identification of each frequency step.

1.03 Output level can be adjusted for proper value with the XMT LEVEL control knob and displayed. 1004 Hz (800 Hz for 808A-11) can also be generated continuously for standard level measurement (set in LEVEL, dBm mode) and as a "holding tone" to lock compandors in "open" mode. Notched noise measurements can then be made with another 808A at the distant end. In the sweep mode, the generator avoids energy near 2600 Hz to prevent interference with signaling devices which may be on the circuit. Thus the 2604 Hz signal is omitted from the sweep plan. Each frequency is generated for about 5 seconds. (Special function of the 808B allows transmission of a 2600 Hz tone when the SELF-TEST/MAN STEP button is used in conjunction with the Function Selector switch.)

LEVELMETER

1.04 Incoming level (dBm) measurements are displayed on the digital readout. In addition to this standard function, the 808A also provides specially calculated readings. In the RELATIVE LEVEL position the set measures the difference between the received value and a reference level as the VF band is swept, displaying results as variation from reference. The reference is set when the function switch is moved from RECEIVE LEVEL to RELATIVE LEVEL. The feature is typically used in conjunction with a distant 808A generating tone via AUTO SWEEP. Frequency and Relative Level are alternately displayed. In this manner attenuation distortion can be quickly read and recorded if desired.

1.05 In the S/N RATIO position the set measures signal-to-noise ratio by first measuring the received test tone (1004 or 800 Hz) level, then measuring circuit noise with the test tone notched out. The test tone is passed through a low pass filter and into the level detector (Average/True RMS) circuits via multiplexers, and the signal level is determined and stored in RAM (Random Access Memory) via the A/D converter and the DATA BUS. To measure circuit noise level, the receiving signal is first passed through a Notch filter (to filter out the holding tone), then the noise level is measured by the level detector circuits and stored in RAM. The values are processed and calculated by the microprocessor and results are displayed on the digital readout.

NOISE METER

1.06 Noise (in dBrn) is measured in balanced or noise-to-ground mode as desired. In the 3 kHz FLAT Noise position, idle circuit (terminated) noise is measured through a 3 kHz FLAT filter and displayed on the digital readout. When the function selector is set to C-NOTCH (808A-11: TELEPHONE) position, idle circuit (terminated) noise is measured through a C-Message (808A-11: Psophometric) filter which notches out incoming test tone. In the TO GROUND position, common mode noise-to-ground is measured weighted by a flat 3 kHz low-pass filter. All unweighted incoming frequency and noise measurements are made through a 10 kHz Low Pass Filter.

FREQUENCY METER (Counter)

1.07 A Frequency Counter senses the analog signal's (Transmitted or Receiving) frequency and transmits this information digitally to the CPU and the LED Display via the Data Bus. Provision is made to audibly monitor the transmitted and received frequencies with a built in speaker and adjustable volume control.

A/D CONVERTER

1.08 The A/D (analog to digital) converter's function is to convert the analog signals of the input level and noise to a digital word. The digital word is then sent to the CPU and the LED Display via the Data Bus.

INTERFACE MODULES

1.09 The Function Interface senses which of the twelve positions of the Function switch is selected. It also senses the input impedance and whether or not the manual self test key is depressed. After gathering all this information, the Function interface converts this to binary code and sends this data to the CPU via the Data Bus.

1.10 The Signal Control Interface converts the digital word from the CPU into control signals to enable the various multiplexer ports and amplifiers in the receive measurement sections of the test set.

1.11 The Oscillator Interface converts the CPU's digital word into signals to control the various transmit frequencies of the sine wave oscillator.

1.12 The Display Interface contains a decoder that converts the binary word from the bus to the proper codes to light the appropriate elements of the digital display.

BRIDGED/TERMINATED MEASUREMENTS

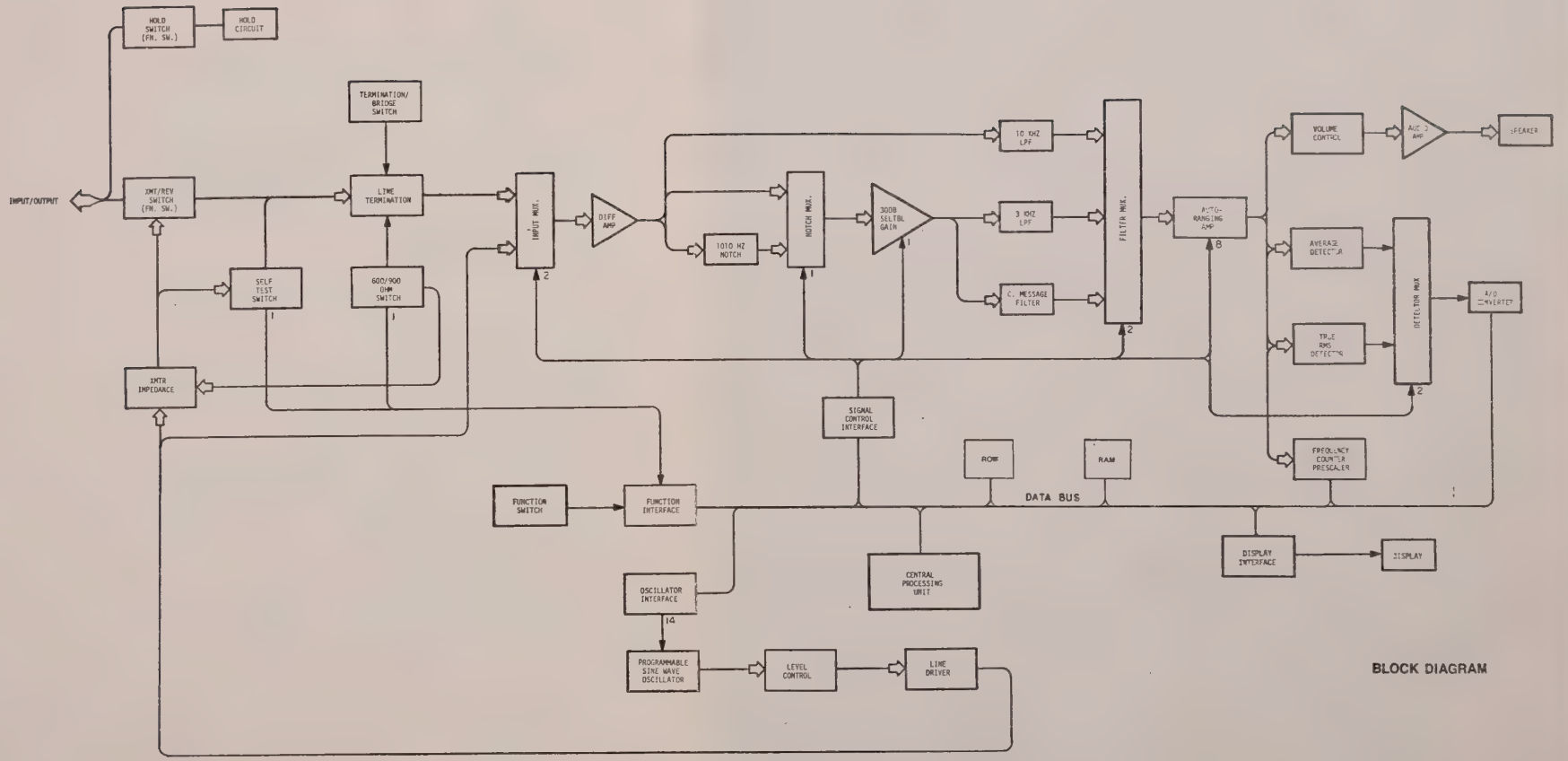
1.13 A switch is provided to select either bridged or terminated mode. Bridging permits measurements on working circuits or in circumstances where the circuit is already terminated. In the Terminated mode, the 808A supplies the load for an otherwise open circuit. Another switch selects 600 or 900 ohms for terminated readings, permitting wide use in central office and direct cable measurements.

SELF TEST

1.14 When the 808A is first turned on, the set automatically performs a number of self-checks and a display indicator test. A manual SELF TEST (808B: SELF-TEST/MAN. STEP) push-button is provided on the front panel of the set. When pressed, the transmitter test tone is looped internally to the receiver input. This provides for checking the frequency counter and level meter. Self test mode is cancelled as soon as the SELF TEST push-button is released.

HOLD CIRCUIT

1.15 A special holding circuit is provided to prevent dropping a "dialed-up" connection while making tests. This enables the technician to disconnect the hand telephone set from the "cuff link" posts when a "dialed-up" line is to be tested.



BLOCK DIAGRAM

2. CALIBRATION

TEST EQUIPMENT

2.01 Test equipment recommended for maintenance of the Sierra 808A is listed in Table 2-1. Equivalent instruments, with characteristics equal to or better than those listed, may be used in lieu of specific models or types recommended.

Table 2-1. Recommended Test Equipment

DESCRIPTION	MANUFACTURER & MODEL OR PART NUMBER	COMMENT
Frequency Synthesizer	Fluke 6011A	Note: a signal generator may be used provided it is monitored by an accurate frequency counter.
Digital Multimeter	Dana 4300	1 Megohm input or greater; 1% accuracy
High Resolution Counter	Fluke 1900A	2 MHz or greater
AC Voltmeter	Fluke 8920	1 Megohm input or greater; 200 Hz - 4 kHz; linear dB scale
Power Supply	Power Design TP325	30 VDC, 500 MA
Termination Test Fixture		Note: See Figure 2-6 for schematic and Table 2-6 for parts list of TF00238.
Termination Resistor		600 ohm

INTERNAL ACCESS

2.02 For access to internal parts of the 808A and to various test points on PCB's, remove the back cover as follows:

Step 1: Turn ON-VOLUME control to OFF.

Step 2: Remove four captive screws from battery cover (case back) and remove cover and battery pack.

Step 3: Remove three screws securing case bottom; two located on upper battery compartment and one located at lower end of case.

Step 4: Remove case back allowing battery cables to slide out of battery compartment. Set battery pack on a bench, next to 808A, and connect battery cables while observing polarity.

RECEIVER TESTS

2.03 Receiver tests include a dial test, noise level, relative level, C-Notch, 3 kHz Flat, "TO GROUND," signal to noise ratio and frequency accuracy as described in the following paragraphs.

Dial Test

2.04 The dial test is performed as follows: Allow the unit to initialize. Position Function Selector to DIAL. Display should read "0.0". The dB and Hz LED indicators should be off.

Preliminary Test Set-Up

2.05 Before beginning calibration procedures, allow test equipment to warm up for a minimum of 15 minutes.

Step 1: Connect test equipment in accordance with Figure 2-1, attaching the synthesizer between Tip and Ring of 808A Test Cord.

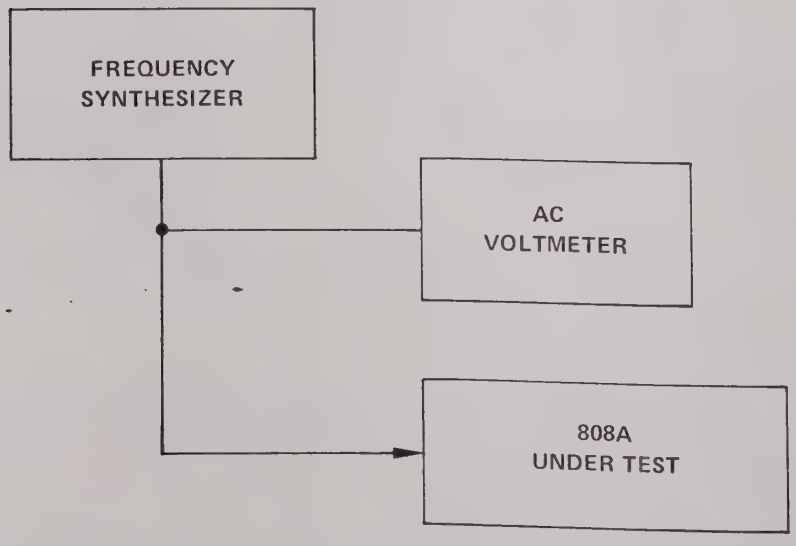


Figure 2-1. Test Set-Up

Level

2.06 Receive level measurements are tested as follows:

Step 1: Position 808A Function Selector to RCV LEVEL, dBm, TERM/BRDG switch to TERM and 600/900 switch to 600. Turn ON-VOLUME control to ON.

Step 2: Set Synthesizer output frequency for 1004 Hz and level for 0 dB on AC voltmeter.

Step 3: Adjust A3R16 until a 0.0 dBm point is obtained, as indicated by 808A display (display changes from –0.0 to +0.0 or from +0.0 to –0.0).

Step 4: Set Synthesizer for +9.9 dBm on AC voltmeter. The 808A should display +9.9 dBm ±0.2 dB.

Step 5: Reduce Synthesizer output level, in 10 dB steps and observe that the 808A responds as follows:

AC Voltmeter	808A, 808B, 808A-11
+9.9	9.9 dB ±0.2 dBm
0	0 dB ±0.1
- 10	-10 dB ±0.1
- 20	-20 dB ±0.1
- 30	-30 dB ±0.2
- 40	-40 dB ±0.2
- 50	-50 dB ±0.3

Step 6: Reset Frequency Synthesizer output level to 0.0 dB and output frequency to 200 Hz. The 808A should read 0.0 dBm ±0.2 dB.

Step 7: Change Synthesizer output frequency to 2 kHz and observe that 808A still reads 0.0 dBm ±0.2 dB.

Step 8: Change Synthesizer output frequency to 4 kHz. The 808A should read 0.0 dBm ±0.2 dB.

Step 9: Set Synthesizer output frequency to 1004 Hz and the 808A 600/900 switch to 900. Display should read "–1.7 dBm ±1 dB". Return switch to 600.

Relative Level

2.07 Test relative level measurements as follows:

Step 1: Turn 808A Function Selector switch to REL LEVEL, dB. Readout should momentarily display "1004 Hz," then 0.0 dB.

Step 2: Adjust the Synthesizer output for the following levels and observe 808A response, as indicated by the display.

AC Voltmeter	808A, 808B, 808A-11
+10 dB	−10 dB ±0.3 dBm
−10 dB	+10 dB ±0.3
−20 dB	+20 dB ±0.3
−30 dB	+30 dB ±0.3
−40 dB	+40 dB ±0.3

Step 3: Disconnect Synthesizer from 808A Test Cord. Display should read 0.0.

Step 4: Position Function Selector to RCV LEVEL, dBm. The 808A display should indicate a minus (−) sign with no numerals, indicating that no signal is present at the input.

Step 5: Set 808A TERM/BRDG switch to TERM. Depress and hold SELF TEST push button. Rotation of the XMT LEVEL control should permit continuous level adjustment from +9.9 to -40 dBm, as indicated by the 808A readout. Release SELF TEST push button.

Step 6: Position Function Selector to REL LEVEL, dB. The 808A display should indicate no numerals and the dB LED indicator should illuminate.

C-Notch

2.08 Test C-Notch measurements as follows:

808A and 808B

Step 1: Set 808A Function Selector to C-NOTCH (TELEPHONE).

Step 2: Adjust frequency synthesizer to −15 dBm output level and to frequencies as shown in Table 2-2. If the 808A displays the corresponding levels, proceed to paragraph 2.09. If the 808A does not display the expected levels, complete steps 3 and 4.

Step 3: Set Frequency Synthesizer for 1010 Hz and a level of −4.21 dB as read on voltmeter. Terminate signal source in 50 ohms. Adjust A3R21 for a 10.0 dB reading on the 808A display. Change Synthesizer frequency to 1000 Hz and adjust A3R25 for a 10.0 dBrn reading on the 808A. Set Synthesizer frequency to 1020 Hz and adjust A3R29 for 10.0 dBrn on the 808A display. Verify the 808A still reads 10.0 dBrn at 1010 and 1000 Hz. Readjust R21, R25 and R29 in the A3 Board if necessary.

Step 4: Set Synthesizer frequency to the values given in table 2-2 and verify that the level indication on the 808A corresponds to values given in the table. If necessary, perform **minor** adjustments of R21, R25 and R29 to obtain the best overall response, per table 2−2.

808A-11

Step 1: Set 808A-11 Function Selector to TELEPHONE.

Step 2: Set synthesizer to +4.79 dBm; unit will display −70 dBrn ±dB and the dB LED will be on.

Step 3: Adjust the synthesizer to the frequencies in Table 2-2. The unit should read the corresponding level.

Table 2-2. C-Notch Levels

FREQUENCY (Hz) ON FREQUENCY SYNTHESIZER		LEVEL INDICATION (dBrn)	
808A, 808B	808A-11	808A, 808B	808A-11
200	200 Hz	- 49.5 ±2.0	-21.0 ±2 dBrn
300	300	- 57.6	-10.6
400	400	- 62.9	- 6.3 ±1.0 dBrn
500	500	- 66.8	- 3.6
600	600	- 69.9	- 2.0
700	800, 790, 810	- 72.0	-70.0 ±10 dBrn
800	1000	- 73.3 ±1.25	+ 1.0 ±1 dBrn
860	1200	- 72.8	0.0
995	1300	- 15.5 ±3.0	- 0.4
1000, 1010,1020	1500	- 10.0 ±0.1	- 1.3
1182	1800	- 72.8 ±1.25	- 2.4
1300	2000	- 73.8 ±2.0	- 3.0
1500	2500	- 73.6	- 4.2
1700	3000	- 73.3	- 5.6 ±2 dBrn
2000	3300	- 72.9	- 7.1
2500	3500	- 72.1	- 8.5 ±3.0 dBrn
3000	4000	- 70.5	-15.0
4000	4500	- 59.1	-25.0
5000	5000	- 46.2 ±3.0	-36.0

3 kHz Flat

2.09 Test 3 kHz flat measurements as follows:

Step 1: Position Function Selector to 3 kHz Flat.

Step 2: Adjust Frequency Synthesizer to 0.0 dBm and frequencies shown in Table 2-3. The 808A should display corresponding levels.

Table 2-3. Test for 3 kHz Flat Position

FREQUENCY ON FREQUENCY SYNTHESIZER	LEVEL INDICATION ON UNIT	
1.0 kHz	- 90.0 dBrn	±0.2 dB
2.0	- 89.0 dBrn	±0.2 dB
3.0	- 87.0 dBrn	±0.5 dB

"To Ground"

2.10 Test "TO GROUND" measurement in the following manner:

Step 1: Connect Frequency Synthesizer between Tip of 808A test cord and E1 (sleeve) on A1 Sub-Assembly board. (Front cover will have to be removed to provide access to E1.)

Step 2: Position Function Selector to TO GROUND. Short Tip and Ring of 808A test cord together.

Step 3: Adjust Synthesizer output frequency for 1004 Hz and level as indicated in Table 2-4. The 808A should read corresponding levels ±1.5 dB.

Table 2-4. Test For Noise to Ground Position

LEVEL SET ON AC VOLTMETER	INDICATION ON UNIT
+10 dBm	100 dBrn
0 dBm	90 dBrn
-10 dBm	80 dBrn
-20 dBm	70 dBrn

Signal to Noise Ratio

2.11 Signal to Noise ratio is tested as follows:

Step 1: Connect Frequency Synthesizer between Tip and Ring of 808A test cord.

Step 2: Set 808A TERM/BRDG switch to TERM, 600/900 switch to 600, and Function Selector to S/N RATIO, dB.

Step 3: Adjust Synthesizer output level to 0 dBm and observe 808A display for a reading of 70 ±10 dB.

Step 4: Disconnect Synthesizer from Tip and Ring of 808A test cord. Display should indicate 0.0 dB with "Hz" LED blinking.

Frequency Accuracy

2.12 Test the receiver frequency accuracy as follows:

Step 1: Position Function Selector to FREQUENCY. The 808A display should read 0.0 Hz.

Step 2: Set TERM/BRDG switch to TERM. Depress and hold SELF TEST push button. Instrument should display "1004 Hz" within +3, -2 Hz limits.

Step 3: Release SELF TEST push button and set TERM/BRDG switch to BRDG.

Step 4: Connect Frequency Synthesizer between tip and ring of 808A test cord. Set Synthesizer output frequency for 1004 Hz and output level for 0.0 dB on the AC voltmeter. The 808A should display "1004 ±1 Hz".

Step 5: Vary Synthesizer output frequency from 200 Hz to 4.0 kHz. The 808A should display the corresponding frequencies (±1 Hz).

Step 6: Reset Synthesizer output level to –40 dB and vary its output frequencies between 60 Hz and 4.0 kHz. The 808A should display the corresponding frequencies (±1 Hz).

Step 7: Disconnect Frequency Synthesizer from 808A test cord and turn ON-VOLUME control off.

TRANSMITTER TESTS

2.13 Transmitter tests include level measurements, holding tone accuracy, and variable oscillator accuracy as described in the following paragraphs.

Level

2.14 Test transmit level measurements as follows:

Step 1: Position Function Selector to XMT LEVEL, 600/900 switch to 600. Turn unit ON.

Step 2: Connect the AC voltmeter to Tip and Ring of 808A test cord with a termination of 600 ohms resistance. (This can either be done by setting the meter for the above termination or by connecting a resistor directly to Tip and Ring.) Set 808A XMT LEVEL control for 0.0 dBm; verify output with AC voltmeter. Display should read 0.0 dBm ±0.1.

Step 3: Set 808A XMT LEVEL control for –10.0 dBm; verify with AC voltmeter. 808A display should read –10.0 dBm ±0.1.

Step 4: Set XMT LEVEL control to 0.0 dBm and vary ON-VOLUME control over its full range. A tone should be audible from one to ten feet of distance and volume variations should not affect the 808A readings.

Step 5: Very slowly, adjust the XMT LEVEL control throughout its full range. No display discontinuities should be observable as this adjustment is made.

Step 6: Disconnect voltmeter.

Holding Tone Transmit Accuracy

2.15 Holding tone transmit accuracy is tested as follows:

Step 1: Set Function Selector to 1004 Hz and observe 808A Frequency Display for a reading of "1004 Hz" (variations should not exceed +3, –2 Hz).

808B (only) - Set Function Switch to 1004/2600 Hz and observe an 808B Frequency Display of 1004 Hz +3, –2 Hz. Press the SELF TEST, MAN STEP push button and observe an 808B Frequency display of 2600 Hz, +3, –2 Hz. Press push button again and display will return to 1004 Hz.

808A-11 (only) - Set Function Switch to 800 Hz and observe 808A-11 Frequency Display of 800 Hz +3, –2 Hz.

Step 2: Vary the XMT LEVEL control through its range. The 808A display should indicate "1004 +3, –2 Hz"; except at the lowermost limits of the XMT LEVEL control where display goes to "0.0".

Step 3: Connect Frequency Counter between tip and ring of 808A test cord. The Counter should read 1004 +3, –2 Hz. If necessary adjust the XMT LEVEL control of 808A to obtain sufficient level to trigger the Counter.

Variable Oscillator Accuracy

2.16 Test the accuracy of the variable oscillator as follows:

Step 1: Position Function Selector to LEVEL, dBm and adjust the XMT LEVEL control for a unit display reading of –10.0 dBm. Set Function Selector to AUTO SWP.

Step 2: On the counter, observe the frequencies listed in Table 2-5 at approximately 5 second intervals.

808B (only) - Position Function Switch to AUTO SWP. Unit will display 304 Hz and will sweep the entire frequency range from 304 Hz to 4004 Hz, with 2604 Hz omitted. Steps are in 100 Hz increments, at approximately 5 second intervals. Position Function Switch to SWP HOLD. Momentarily press SELF TEST, MAN STEP push button. Display will advance to next frequency step. This is true for entire frequency range. Hold SELF TEST, MAN STEP down and display will sweep at approximately 1 second intervals. At 4004 Hz, display resets to 304 Hz and continues to sweep until button is released. Display will stop at frequency displayed. Operating button again continues sweep.

Table 2-5. Auto Sweep Frequencies

MODEL	FREQUENCIES IN HZ (+3, –2 Hz)
808A	304, 404, 504, 604 to 2404 in 200 Hz increments, 2504, 2704, 2804 to 3404 in 200 Hz increments.
808B	304 to 4004 in 100 Hz increments, with 2604 omitted.
808A-11	250, 304, 404, 504, 604, 800, 1004 to 3404 in 200 Hz increments, substituting 2704 for 2604.

NOTE

In the event that the instrument fails to sweep in the correct sequence or the sweeping cycle "freezes" at any given frequency tone, the unit should be sent back to the factory. (Realignment of the digitally controlled sine wave oscillator requires the use of a specially designed memory disable fixture.)

Step 3: Adjust the ON-VOLUME control for an audible level and repeat Step 2 checking that the level remains audible over the complete sweep range.

Step 4: Switch Function Selector to SWP HOLD. The 808A should display the selected frequency steadily.

Step 5: Switch Function Selector to AUTO SWP. The 808A should resume sweeping at 5 second intervals.

Step 6: Switch Function Selector first to SWP HOLD, then back to AUTO SWP. Repeat several times. Instrument should sweep-up at approximately one second intervals.

Step 7: Disconnect the Frequency Counter from tip and ring of 808A test cord and connect an AC voltmeter in its place.

Step 8: Position Function Selector to AUTO SWP. Terminate the 808A with 600 ohms and observe that the 808A output level (as monitored on the AC voltmeter) remains constant within ±0.2 dB throughout the sweep range.

Step 9: Disconnect the AC voltmeter.

SUBASSEMBLIES

2.17 The display/selector board (A1) and the signal board (A3) are calibrated as described in the following. (The A2 board must be calibrated at the factory, as a specially designed memory disable fixture is necessary.)

Display/Selector Board

2.18 Display/selector board alignment includes voltage, impedance (termination and bridging) and function selector tests as described in the following paragraphs.

Voltage

2.19 The following test is for voltage verification at several points on the A1 board.

Step 1: Connect A1 board to the Frequency synthesizer and digital multimeter as shown in Figure 2-2.

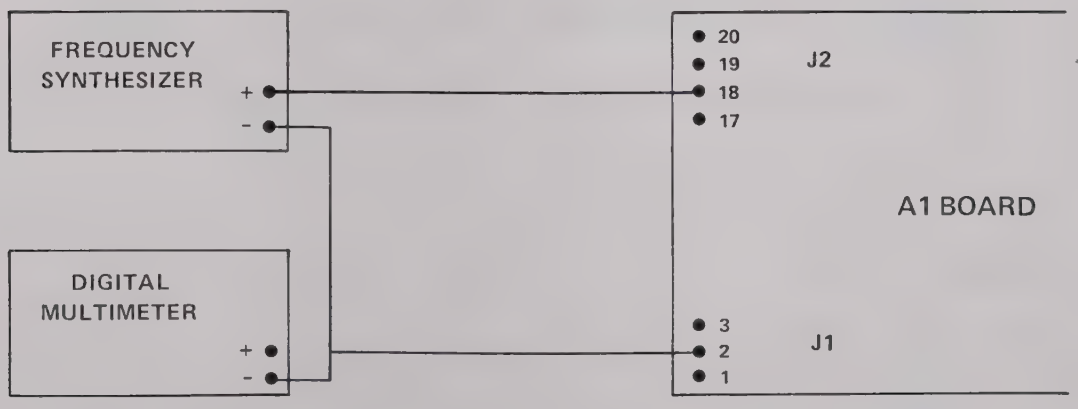


Figure 2-2. Equipment Set-Up

Step 2: Connect battery pack harness to J4 and insert charger plug into J6.

Step 3: Turn 808A to ON.

Step 4: Set the frequency synthesizer to 32 kHz, square wave, 5V p-p. With the digital multimeter ground at J1-2, check the following voltages:

Pin Number	Voltage
J1-1	+5V ±0.3
J1-3	-5V ±0.3
J2-22	+5V ±0.3
J2-24	-5V ±0.3
J2-21	+10V

Step 5: Turn the 808A to OFF.

Step 6: Disconnect the frequency synthesizer and digital multimeter.

Step 7: Connect the digital multimeter to J4, ground to pin 2. Voltage should be greater than 13.2 volts.

Impedance

2.20 Check impedances as follows:

Step 1: Connect the digital multimeter to Tip and Ring of 808A test cord or the hand telephone set connectors (Butt-Ins) on the A1 board. Set the meter for resistance.

Step 2: Set the TERM/BRDG switch of the A1 PCB to TERM and the 600/900 switch to 600. The digital multimeter should read 604 ±2 ohms.

Step 3: Set the 600/900 switch to 900 and verify a reading of 906 ohms ±2 on the digital multimeter.

Step 4: Set the TERM/BRDG switch to BRDG. The multimeter should read greater than 50K ohms.

Step 5: Disconnect the digital multimeter.

Function Selector

2.21 The various functions of the selector switch are tested as follows:

Step 1: Connect the A1 board to known good A2 and A3 boards. (If no such boards are available, the unit must be returned to the factory.) TERM/BRDG switch should be set to BRDG and 600/900 switch to 900.

Step 2: Position the function selector switch to DIAL and turn the unit ON.

During initialization, the display should read "+888.8" with the dB and Hz LED's on. After initialization, the dB and Hz LED's should go off and the display read "0.0".

Step 3: Turn function selector to LEVEL, dBm (XMT). Adjust XMT LEVEL thumbwheel. Verify that the unit ranges from +9.9 to –40 dBm with the dB LED lighted.

Step 4: Set switch to 1004 Hz position. The display should read 1004 +2, –1 Hz with the Hz LED lighted. Adjust the ON VOLUME control to verify speaker volume change.

Step 5: Turn the Function Selector switch to AUTO SWP and check for unit sweeping. (See Table 2-5 for frequency sweep range.) Verify that the speaker works for all frequencies.

Step 6: Set the selector for SWP HOLD. The unit should hold at that frequency.

Step 7: Turn the function selector to FREQUENCY. The display should read "0.0" with the Hz LED lighted. Press and hold the SELF TEST button. The 1004 Hz tone should be audible and display should read 1004 Hz +3, –2 with Hz LED lighted. Release the SELF TEST button. (Note: the SELF TEST button internally loops transmit to receive.)

Step 8: Set the switch to RCV LEVEL dBm and verify that there is no digital display, but the dB LED is on. Switch TERM/BRDG switch to TERM and press and hold SELF TEST button. The 1004 Hz tone should be transmitted with its level shown in the display. Release SELF TEST button.

Step 9: Connect the frequency synthesizer to Tip and Ring (the Butt-Ins on A1) and set it for 1004 Hz and +10.79 dBm monitored for accuracy by the AC voltmeter. The display of the unit should read "0.0" with the dB LED lighted.

Step 10: Turn the Function Selector to REL LEVEL dBm and verify that the display momentarily reads "1004 Hz" and then shows "0.0 dBm."

Step 11: Set the function switch to S/N RATIO dB and verify a display reading of 70 ±10 dB. Disconnect the frequency synthesizer. (Do not change synthesizer settings.) The display should read "0.0" with the dB LED lighted and the Hz LED blinking.

Step 12: Reconnect the frequency synthesizer and turn the function selector to C-NOTCH. The unit under test should read 20 dBrn ±10 dB.

Step 13: Set the unit to 3 kHz FLAT and verify a display of 90 ±2 dB.

Step 14: Turn the function selector to TO GROUND and connect the ground of the frequency synthesizer to ground (E3) on the A1 board. Short Tip and Ring (Butt-Ins) on the A1 board and verify a reading of 90 dBrn ±1.5 dB.

Step 15: Disconnect the frequency synthesizer and reset the function selector switch of the unit to RCV LEVEL dBm. Set the power supply for 30V and connect as shown in Figure 2-3.

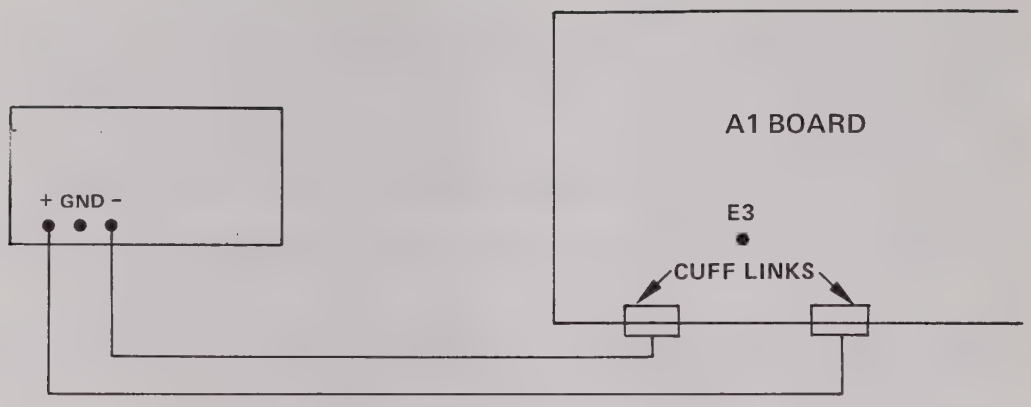


Figure 2-3. Power Supply to Cuff Link Connections

Step 16: Set the 808 to BRDG and switch the power supply meter to current. The meter should read 20 to 25 ma. Turn the power supply off and disconnect from unit.

Step 17: Turn the unit to OFF and disconnect the A1 board from the A2 and A3 boards.

Signal Board, A3

2.22 Alignment of the A3 Signal Board consists of common mode rejection readings (CMRR) and notch filter adjustments and tests of several functions indicated on the Function Selector switch, including receive level, relative level, frequency, C-Notch, 3 kHz flat, "to ground", signal to noise ratio and transmit level.

CMRR

2.23 To perform the CMRR adjustments, complete the following steps:

Step 1: Connect ground of the power supply, frequency synthesizer, and AC voltmeter to J2-2 and J2-7 of A3 board as shown in Figure 2-4. Connect the +5V of the power supply to J2-1 and the -5V to J2-3.

Step 2: Connect the test signal of the frequency synthesizer to J2-6 and U3, pins 9 and 10. Set the synthesizer to +20.0 dBm and 550 Hz.

Step 3: Connect the AC voltmeter to U5, pin 14.

Step 4: Adjust A3R4 for the minimum level indication on the AC voltmeter (should be less than -50 dBm).

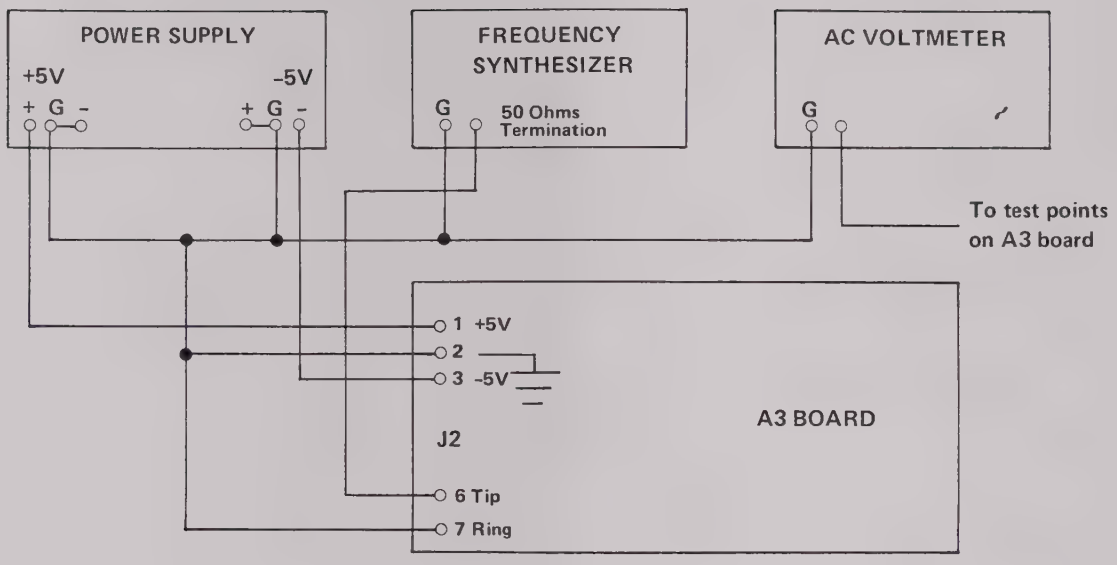


Figure 2-4. CMRR Adjustment Test Equipment Set-Up

Notch Filter

2.24 Adjustment of the notch filter is done as follows:

Step 1: Connect the frequency synthesizer as in paragraph 2.23, step 2 above and set it for 6.8 dBm and 1010 Hz.

Step 2: Connect the AC voltmeter to U13, pin 14.

Step 3: Adjust A3R21 to minimum level indication on the voltmeter (should be -60 dBm or more).

Step 4: Set the frequency synthesizer to 1000 Hz and connect the AC voltmeter to U13, pin 1.

Step 5: Adjust A3R25 for minimum level indication on the voltmeter (should be -60 dBm or more).

Step 6: Set the frequency synthesizer to 1020 Hz and connect the voltmeter to U15-1.

Step 7: Adjust A3R29 for a minimum indication on the AC voltmeter (should be -60 dBm or more).

Step 8: Set the frequency synthesizer to 862 Hz. The AC voltmeter should read -16.8 to -19.8 dBm.

Step 9: Set the synthesizer to 1182 Hz and verify a reading of -16.8 to -19.8 dBm on the voltmeter.

Step 10: Turn the power supply off and disconnect the A3 board from all test equipment.

Function Selections

2.25 Function selection tests are performed as follows:

Step 1: Connect the A3 board to an 808 unit with known good A1 and A2 boards and with a battery pack connected.

Step 2: Connect the unit, frequency synthesizer and AC voltmeter in accordance with paragraph 2.05

Receive Level
Step 3: Complete steps 1 - 3 of paragraph 2.06.

Relative Level
Step 4: Complete step 1 of paragraph 2.07.

Frequency
Step 5: Set the frequency synthesizer to 1004 Hz and +10.79 dBm and turn the function selector to FREQUENCY. Verify a reading of 1004 Hz on the 808.

C-Notch
Step 6: Set function selector to C-NOTCH and complete step 2 of paragraph 2.08.

3 kHz Flat
Step 7: Complete steps 1-3 of paragraph 2.10.

To Ground
Step 8: Complete steps 1-3 of paragraph 2.10.

Signal to Noise Ratio
Step 9: Complete steps 1-3 of paragraph 2.11.

Transmit Level

Step 10: Turn unit to OFF and disconnect the frequency synthesizer and the unit's battery pack.

Step 11: Connect the unit, the power supply, the test fixture and AC voltmeter as per Figure 2-5.
Note: Figure 2-6 illustrates schematic for the termination test fixture and parts are listed in Table 2-6.

Step 12: Turn the 808A ON VOLUME control to ON. Set the function selector switch to LEVEL, dBm (XMT) and the 600/900 switch to 600.

Step 13: Turn the XMT LEVEL control from +9.9 to -40 dBm in increments of five (+9.9, +5, 0, -5, etc.) and compare the unit level readings to those on the AC voltmeter. The readings should agree within ±0.1 dB for levels of +9.9 to -19 dBm and within ±0.2 dB below -19 dBm

Step 14: Disconnect the AC voltmeter and external power supply. Connect the internal battery pack and reassemble the unit.

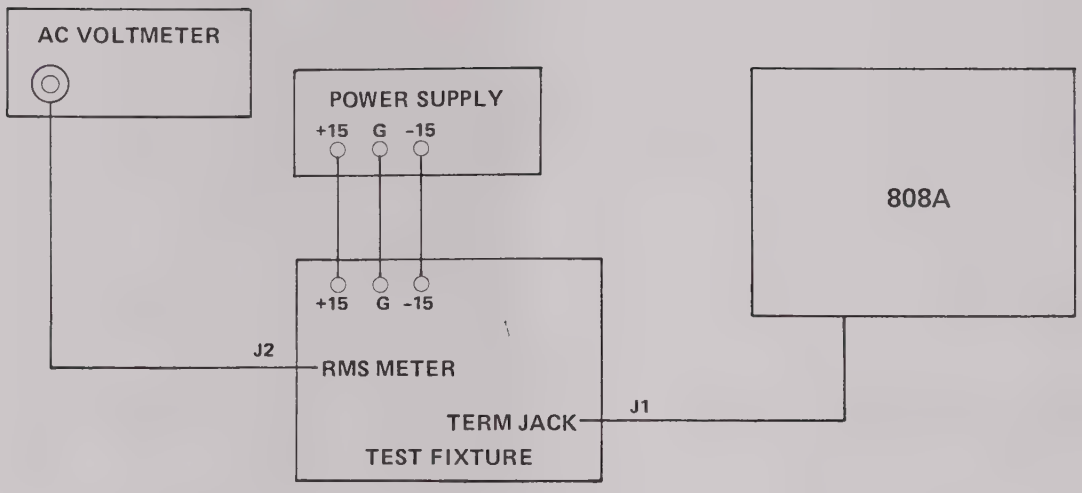


Figure 2-5. Transmit Level Test Set-Up

Table 2-6. Test Fixture Parts List

REFERENCE DESIGNATION	DESCRIPTION	SIERRA PART NUMBER
R1, R4	Resistor, metal film, 604 ohm, 1/8W, 1%	907306040
R2	Resistor, metal film, 18.2K ohm, 1/8W, 1%	907301822
R3	Resistor, metal film, 29.4K ohm, 1/8W, 1%	907302942
C1	Capacitor, dipped mica, 470 pf, 500V, 5%	901900471
C2	Capacitor, dipped mica, 1000 pf, 500V, 1%	901900102
U1	IC, TL082, Dual J-fet Input, Op Amp	920310082
J1	808A, 808B: Jack, 310-type	914400024
	Early 808A: Jack, 309-type	914400036
	808A-11: Jack, "Siemens" type	914400035
J2	Jack, BNC	914600035
J3	Jack, banana, red	915200017
J4	Jack, banana, blue	915200018
J5	Jack, banana, black	915200019
	Chassis, 3.75 x 3.75 x 3.75	916700061

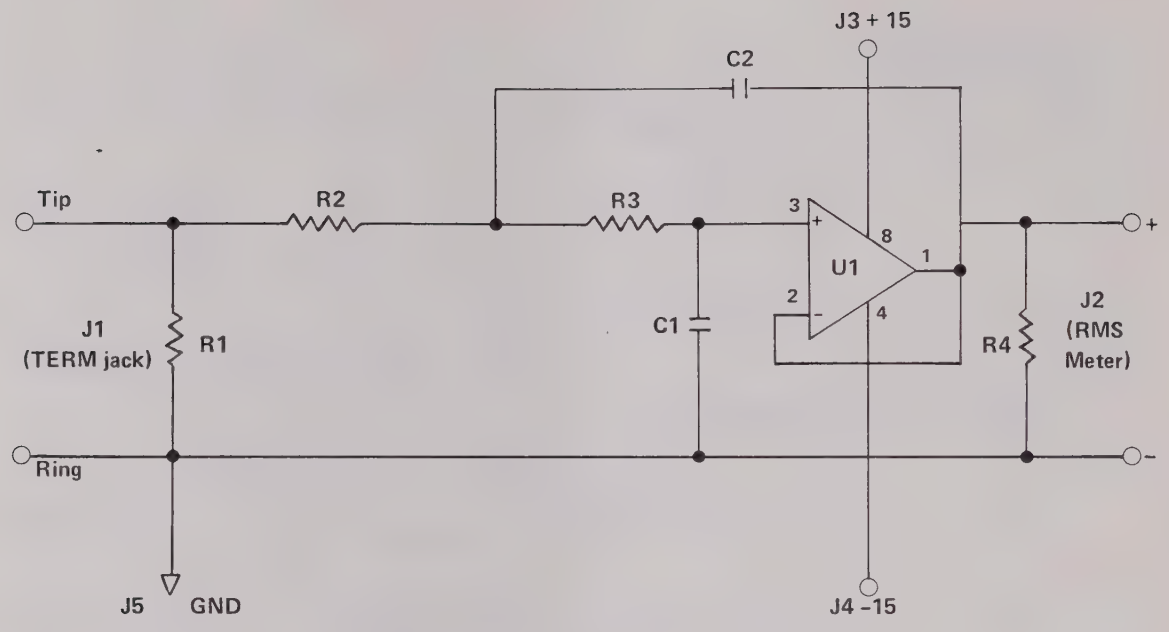


Figure 2-6. Termination Test Fixture

OPERATIONAL TEST

2.26 When the set is first powered ON, the microprocessor automatically performs a self-check that includes lighting all indicators. The digital readout will then display "+8888" momentarily. The "dB" and "Hz" indicators will also light.

2.27 It is also suggested that the following manual self-test be performed to insure that the set is working properly. If results deviate significantly from those anticipated, servicing may be necessary.

Step 1: Turn ON-VOLUME control to ON.

Step 2: When automatic self-check is completed, set Function Selector switch to LEVEL, dBm, TERM/BRDG switch to TERM, and 600/900 switch to 600.

Step 3: Adjust XMT LEVEL control for "0.0 dBm" on digital readout.

Step 4: Set Function Selector switch to FREQUENCY.

Step 5: Press and hold SELF TEST push button (internally loops generator to receiver). Digital readout should indicate "1004 Hz" (+3, -2 Hz).

Step 6: Set Function Selector switch to RCV LEVEL, dBm. With SELF TEST push button pressed, digital readout should indicate "0.0 dBm" (+0.2).

Step 7: Rotate the function selector switch throughout its various positions and verify that the unit responds as indicated in Table 2-7.

Table 2-7. Final Operation Testing

FUNCTION SELECTOR	DISPLAY INDICATION	COMMENTS
DIAL	"0.0 dB"	No audible tone
LEVEL, dBm	Level in dB	Audible tone
1004 Hz	"1004 Hz"	Audible tone
AUTO SWP	"304 to 3404 Hz"	Audible tones
SWP HOLD	Holds any tone	Audible tone
FREQUENCY	"0.0 Hz"	No Audible tone
RCV LEVEL, dBm	"-blank", dB: ON	No audible tone
REL LEVEL, dB	"-blank", dB: ON	No audible tone
S/N RATIO, dB	"0.0 dB", Hz: Flash	Maximum noise level
C-NOTCH	"-blank", dB: ON	Maximum noise level
3 KHZ FLAT	"-blank", dB: ON	Maximum noise level
TO GROUND	"-blank", dB: ON	Maximum noise level (level below 60 dBrn)

3. TECHNICAL DATA

SPECIFICATIONS

3.01 Specifications for the three different models, 808A, 808B and 808A-11 are listed in Tables 3-1, 3-2 and 3-3.

Table 3-1. 808A Specifications

Transmitter

Level:	−40 to +9.9 dBm, continuously adjustable
Level Stability:	Less than 0.05 dB/hr variation (after 5 minute warmup)
Frequency Stability:	Less than 0.1%/hr drift (after 5 minute warmup)
Harmonic Distortion plus noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 900 ohms

Holding Tone

Frequency:	1004 Hz
Accuracy:	−2 to +3 Hz

Variable Oscillator

Frequency:	304, 404, 504, 604, 804, 1004, 1204, 1404, 1604, 1804, 2004, 2204, 2404, 2504, 2704, 2804, 3004, 3204, and 3404 Hz
Accuracy:	−2 to +3 Hz
Flatness:	±0.2 dB, relative to 1004 Hz
Sweep Control:	Automatic, approx. 5 seconds per frequency. Can be stopped for longer periods with Sweep Hold

Receiver

Level Measurements

Frequency Range:	200 to 4000 Hz
Level Range:	−50 to +9.9 dBm
Level Accuracy:	±0.1 dB at 1004 Hz, 0 to −19 dBm ±0.2 dB at 1004 Hz, −20 to −50 dBm ±0.2 dB at all other frequencies
Range Selection:	Automatic
Detector:	Averaging

Noise Measurements

Level Range	
Metallic:	10 to 90 dBrn ±1 dB
To Ground:	50 to 130 dBrnCO ±1.5 dB
Weighting:	C-Message with 1010 Hz notch 3 kHz Flat
Range Selection:	Automatic
Detector:	True RMS

Relative Level Measurements

Range:	−12 to +3 dB, ±0.3 dB
Range Selection:	Automatic

Signal-to-Noise Measurements

Range:	20 to 50 dB ±1dB
Range Selection:	Automatic

Frequency Counter

Resolution:	±1 Hz
Range:	60 Hz to 4000 Hz ±1 Hz
Level Range:	−50 to +9.9 dBm
Range Selection:	Automatic

Impedance:	600 ohms, 900 ohms and bridging
Bridging Impedance:	Equal to or greater than 50 K ohms
Return Loss:	30 dB at all frequencies

Holding Circuit

DC Current:	23 mA ±5mA at 10 to 50 VDC of either polarity

Power Requirements

Batteries:	Rechargeable Ni-Cad Battery Pack
Battery Charge Life:	3 hours continuous use
Battery Charging Method:	External battery charger, 8 hours for full charge

Environmental

Temperature (Operating):	0°C to +50°C (+32°F to + 122°F)
(Storage):	−40°C to +60°C (−40°F to + 140°F)

Input Circuit Protection

Lightning:	600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals

Enclosure:	High impact molded plastic

Dimensions

Length:	25.4 cm (10 inches)
Width:	11.4 cm (4.5 inches)
Depth:	5.7 cm (2.25 inches)
Weight:	Less than 1.6 Kg (3.4 lbs.)

Table 3-2. 808B Specifications

Transmitter

Level:	–40 to +9.9 dBm, continuously adjustable
Level Stability:	Less than 0.05 dB/hr variation (after 5 minute warmup)
Frequency Stability:	Less than 0.1%/hr drift (after 5 minute warmup)
Harmonic Distortion plus noise:	Equal to or greater than 50 dB down at all levels
Impedance:	600 or 900 ohms

Holding Tone

Frequency:	1004 Hz
Accuracy:	–2 to +3 Hz

Signaling Tone

Frequency:	2600 Hz

Variable Oscillator

Frequency:	304,404,504,604,704,804,904,1004,1104, 1204,1304,1404,1504,1604,1704,1804, 1904,2004,2104,2204,2304,2404,2504, 2704,2804,2904,3004,3104,3204,3304, 3404,3504,3604,3704,3804,3904, and 4004 Hz
Accuracy:	–2 to +3 Hz
Flatness:	±0.2 dB, relative to 1004 Hz
Sweep Control:	Automatic, approx. 5 seconds per frequency Can be stopped for longer periods with Sweep Hold
	Manual, approx. 2 frequencies per second. Can be stopped for longer periods at any frequency.

Receiver

Level Measurements

Frequency

Range:	200 to 4000 Hz
Level Range:	–50 to +9.9 dBm
Level Accuracy:	±0.1 dB at 1004 Hz, 0 to –19 dBm ±0.2 dB at 1004 Hz, –20 to –50 dBm +0.2 dB at all other frequencies
Range Selection:	Automatic
Detector:	Averaging

Noise Measurements

Level Range

Metallic:	10 to 90 dBrn ±1 dB
To Ground:	50 to 130 dBrn ±1.5 dB
Weighting:	C-Message with 1010 Hz notch 3 kHz Flat
Range Selection:	Automatic
Detector:	True RMS

Relative Level Measurements

Range:	–12 to +3 dB, ±0.3 dB
Range Selection:	Automatic

Signal-to-Noise Measurements

Range:	20 to 50 dB ±1 dB
Range Selection:	Automatic

Frequency Counter

Resolution:	±1 Hz
Range:	60 Hz to 4000 Hz ± 1 Hz
Level Range:	–50 to +9.9 dBm
Range Selection:	Automatic
Impedance:	600 ohms, 900 ohms and bridging
Bridging Impedance:	Equal to or greater than 50 K ohms
Return Loss:	30 dB at all frequencies

Holding Circuit

DC Current:	25 ±5 mA at 10 to 50 VDC of either polarity

Power Requirements

Batteries:	Rechargeable Ni-Cad Battery Pack

Battery

Charge Life:	3 hours continuous use

Battery Charging

Method:	External battery charger, 8 hours for full charge

Environmental

Temperature

(Operating):	0°C to +50°C (+32°F to +122°F)
(Storage):	–40°C to +60°C (–40°F to +140°F)

Input Circuit Protection

Lightning:	600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals
Enclosure:	High impact molded plastic

Dimensions

Length:	25.4 cm (10 inches)
Width:	11.4 cm (4.5 inches)
Depth:	5.7 cm (2.25 inches)
Weight:	Less than 2 Kg (3.8 lbs)

Table 3-3. 808A-11 Specifications

Transmitter

Level:	−40 to +9.9 dBm, continuously adjustable
Level Stability:	Less than 0.05 dB/hr variation (after 5 minute warmup)
Frequency Stability:	Less than 0.1%/hr drift (after 5 minute warmup)
Harmonic Distortion plus noise:	Equal to or more than 50 dB down at all levels
Impedance:	600/150 ohms (600/900)*

Holding Tone

Frequency:	800/820/850 Hz (800)*
Accuracy:	+3 to −2 Hz

Variable Oscillator

Frequency: See Note 1 *	200, 250, 300, 400, 600, 800, 900, 1000, 1400, 1600, 2000, 2400, 2700, 2900, 3000, 3050, 3400, 3600, 3800, 4000, 1004, 1020, 2040 Hz
Accuracy:	+3 to −2 Hz
Flatness:	±0.2 dB, relative to 800 Hz
Sweep Control:	Automatic, approx. 5 seconds per frequency. Can be stopped for longer periods with Sweep Hold

Receiver

Level Measurements

Frequency Range:	200 to 5000 Hz
Level Range:	-45 to +9.9 dBm
Level Accuracy:	±0.1 dB at 800 Hz, 0 to −19 dBm ±0.2 dB at 800 Hz, −20 to −50 dBm ±0.3 dB at all frequencies above 4 kHz
Range Selection:	Automatic
Detector:	Averaging

Noise Measurements

Level Range	
Metallic:	0 to −80 dBm ±1 dB
To Ground:	−40 to +40 dBm ±1.5 dB
Weighting:	Psophometric with notch 3 kHz Flat
Range Selection:	Automatic
Detector:	True RMS

Relative Level Measurements

Range:	−12 to +3 dB, ±0.3 dB
Range Selection:	Automatic

Signal-to-Noise Measurements

Range:	20 to 50 dB ± 1dB
Range Selection:	Automatic

Frequency Counter

Resolution:	±1 Hz
Range:	60 Hz to 5000 Hz ± 1 Hz
Level Range:	-45 to +9.9 dBm
Range Selection:	Automatic

Impedance:	600/150 ohms (600/900)* & bridging
Bridging Impedance:	Equal to or greater than 50 K ohms
Return Loss:	30 dB at all frequencies

Holding Circuit

DC Current:	23 mA minimum at 10 to 50 VDC of either polarity

Power Requirements

Batteries:	Welded Ni-Cad pack rechargeable
Battery Charge Life:	3 hours continuous use
Battery Charging Method:	External battery charger (8 hours for full charge)

Environmental

Temperature (Operating):	0°C to +50°C (+32°F to + 122°F)
(Storage):	−40°C to +60°C (−40°F to + 140°F)

Input Circuit Protection

Lightning:	600 V transient; 10 microsecond rise; 1000 microsecond decay
DC:	100 VDC across input terminals
Enclosure:	High impact molded plastic
Dimensions	
Length:	25.4 cm (10 inches)
Width:	11.4 cm (4.5 inches)
Depth:	5.7 cm (2.25 inches)
Weight:	Less than 1.6 Kg (3.5 lb)

Note 1:

250, 304, 404, 504, 604, 800, 1004, 1204, 1404, 1604, 1804, 2004, 2204, 2404, 2704, 2804, 3004, 3204, and 3404 Hz *

*Early production units.

ORDERING INFORMATION

3.02 All models are supplied with a NiCad battery pack assembly and a charger. Replacements and additional accessories are listed in Table 3-4.

Table 3-4. Accessories

DESCRIPTION	SIERRA PART NUMBER
Battery Pack Assembly	C03295600
Charger (808A, 808B), 115 VAC	917300453
Charger (808A-11), 230 VAC	917300463
Canvas Carrying Case	921000079

3.03 Table 3-5 lists the various test cord plugs and adapters furnished with each unit.

Table 3-5. 808 Cords and Plugs

MODEL	CAPTIVE CORD	310 PLUG-TO-ALLIGATOR CLIP	MINIATURE PLUG-TO-310 PLUG ADAPTER
808A (Early)	Miniature Plug	X	X
808A (Later)	310 Plug	X	
808B	310 Plug	X	
808A-11	"Siemens" Plug		

4. SCHEMATICS AND PARTS LISTS

4.01 Following is a list of schematic diagrams and parts lists for the Sierra 808 series. A few parts are different on the A2 boards of the various models. Those listed with the schematic diagram are for the 808A. The corresponding parts for the 808B and 808A-11 are shown in Table 4-1.

Drawing Number	Description
D03309500	Interconnect Diagram 808A, B, -11
D03309200	A1 Display Selector Board, 808A, B, -11
D03309300	A2 Microprocessor 808A, B, -11
D03309400	A3 Signal Board 808A, B
D03320300	A3 Signal Board 808A-11

Table 4-1. A2 Board Parts Differences

REFERENCE DESIGNATION	808B	808A-11
U15	P/N 920241833	P/N 920261833
U34	P/N 920251833	P/N 920271833
R36	Excluded	(Same)

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REVISIONS			
ZONE	LTR	DESCRIPTION	DATE - APPROVED
	L	PRODUCTION RELEASE	
	A1	ECO 17106	

A1
DISPLAY/SELECTOR BOARD
SCHEM D03309200

A2
MICROPROCESSOR
SCHEM D03309300

A3
SIGNAL BOARD
SCHEM D03309400

PART OF W2 (CABLE)

PART OF W2 (CABLE)

W3 (CABLE)

J1
1 2 3 4 5 6 7 8 9 10 11

J2
1 +5V
2 GND
3 -5V
4 LINE-TIP
5 LINE-RING
6 TERM-T
7 TERM-R
8 LINE-SLV
9 XLEV
10 IDT-T
11 IDT-R

J4
BAT + 1
BAT - 2

J6
CHG + T
CHG - S

J2
1 SINE
2 GND REF
3 D0
4 D1
5 D2
6 D3
7 D4
8 D5
9 D6
10 D7
11 AUDIO
12 IN1
13 IN2
14 DS8
15 BL
16 DEC
17 DS5
18 32KHZ
19 CLEAR
20 HOLD
21 +10V
22 +5V
23 GND
24 -5V
25 DS9

J1
1 RNG0
2 RNG1
3 RNG2
4 RNG3
5 RNG4
6 SAENO
7 SAINT
8 SPARE
9 NOTCH
10 FILTR0
11 FILTR1
12 SIG0
13 SIG1
14 SIGNAL
15 GND-REF
16 SPARE

SLV
RING
TIP
TEST CORD

QTY	QTY	QTY	ITEM NO	PART OR IDENT. NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
					LIST OF MATERIAL OR PARTS LIST		

ALL THREADS UNIFIED SCREW, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B AFTER PLATING, UNLESS OTHERWISE SPECIFIED

DO NO. SCALE DWG

DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED

TOLERANCE UNLESS SPECIFIED		
BASIC	TWO PLACE	THREE PLACE
UP TO 6	± .01	±
6 TO 24	± .02	±
OVER 24	± .05	±
ANGULAR DIMENSION	±	

FINISH

Sierra
LEAR SIEGLER, INC.
SIERRA ELECTRONIC DIVISION
WEST PARK, CALIFORNIA 91304

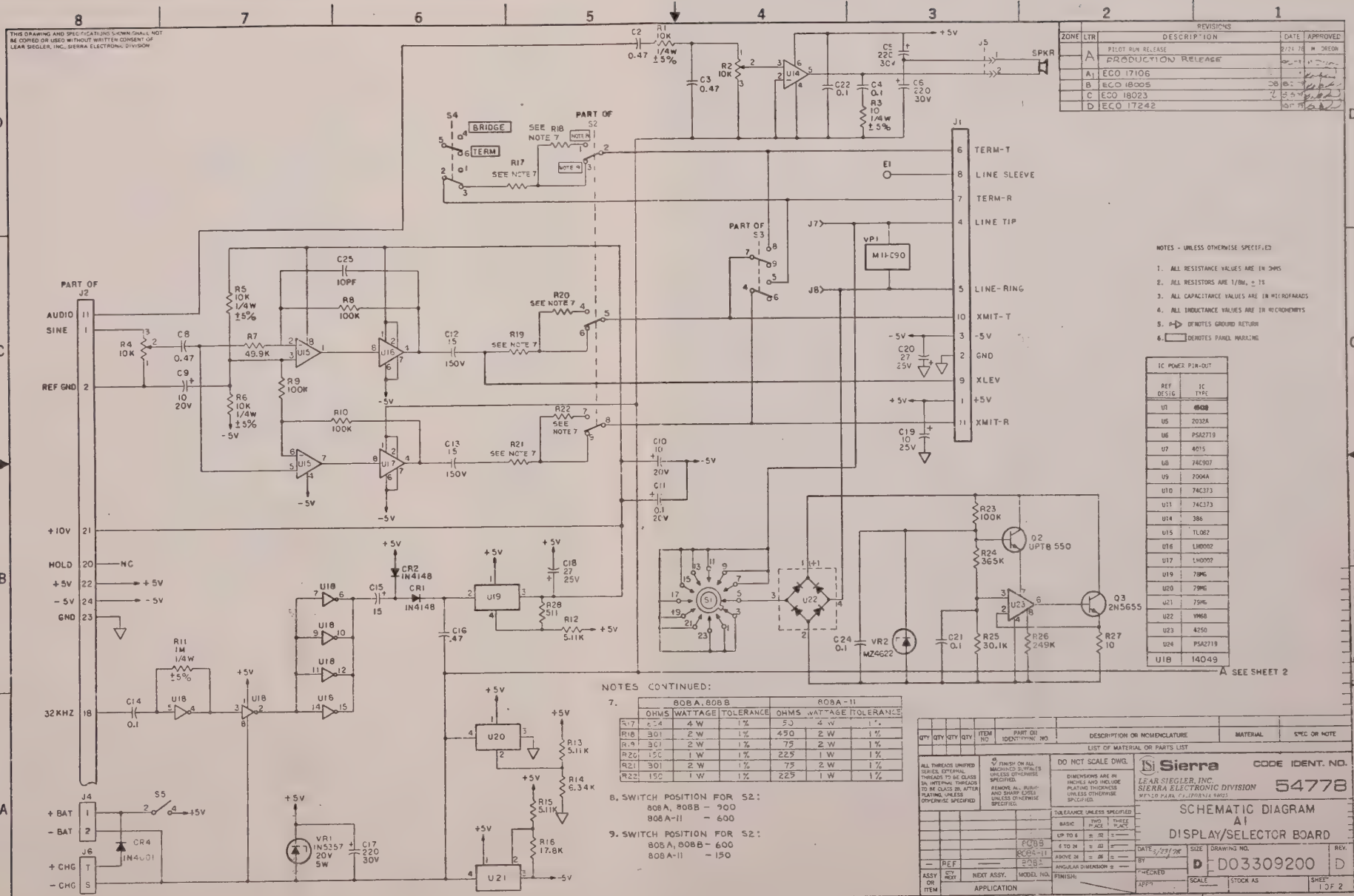
CODE IDENT. NO 54778

INTERCONNECT DIAGRAM
808A/-11/B

DRAWING NO D03309500
SIZE D
REV A1
SCALE
SHEET 1 OF 1

ASSY OR ITEM | QTY | NEXT ASSY. | MODEL NO
APPLICATION

D03309500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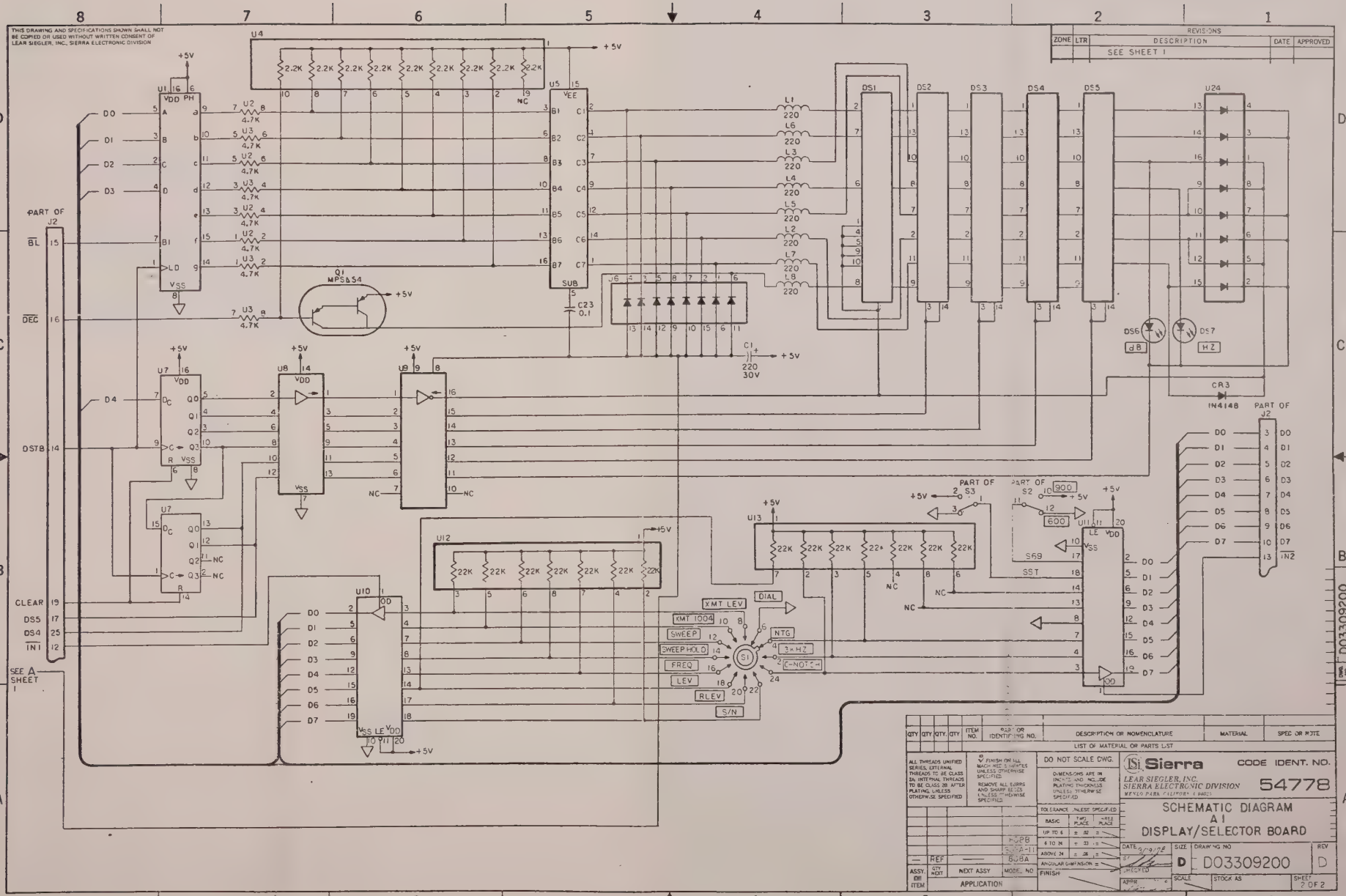
REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
A PILOT RUN RELEASE 2/21/78 M OREGON
A1 PRODUCTION RELEASE 3/23/78 M OREGON
A1 ECO 17106
B ECO 18005 3/8/78
C ECO 18023 4/5/78
D ECO 17242 10/17/78
J1 TERM-T LINE SLEEVE TERM-R LINE TIP LINE-RING XMIT-T -5V GND XLEV +5V XMIT-R
J2 AUDIO SINE REF GND +10V HOLD +5V -5V GND 32KHZ
J4 + BAT - BAT
J6 + CHG - CHG
J5 SPKR
J7 J8
VP1 MIC90
S1 S2 S3 S4 S5 BRIDGE TERM
E1
NOTES - UNLESS OTHERWISE SPECIFIED
1. ALL RESISTANCE VALUES ARE IN OHMS
2. ALL RESISTORS ARE 1/8W, ± 1%
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS
4. ALL INDUCTANCE VALUES ARE IN MICROHENRYS
5. DENOTES GROUND RETURN
6. DENOTES PANEL MARKING
IC POWER PIN-OUT
REF DESIG IC TYPE
U1 6408
U5 2032A
U6 PSA2719
U7 4015
U8 74C907
U9 7004A
U10 74C373
U11 74C373
U14 386
U15 TL082
U16 LH0002
U17 LH0002
U19 78M6
U20 79M6
U21 75M6
U22 VM68
U23 4250
U24 PSA2719
U18 14049
A SEE SHEET 2
NOTES CONTINUED:
7.
808A, 808B: R17 634 4W 1% | R18 301 2W 1% | R19 301 2W 1% | R20 150 1W 1% | R21 301 2W 1% | R22 150 1W 1%
808A-11: R17 50 4W 1% | R18 450 2W 1% | R19 75 2W 1% | R20 225 1W 1% | R21 75 2W 1% | R22 225 1W 1%
8. SWITCH POSITION FOR S2:
808A, 808B - 900
808A-11 - 600
9. SWITCH POSITION FOR S2:
808A, 808B- 600
808A-11 - 150
QTY QTY QTY ITEM NO PART OR IDENTIFYING NO DESCRIPTION OR NOMENCLATURE MATERIAL SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST
DO NOT SCALE DWG.
Sierra
LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION MENLO PARK, CALIFORNIA 94025
CODE IDENT. NO. 54778
SCHEMATIC DIAGRAM A1 DISPLAY/SELECTOR BOARD
DRAWING NO. D03309200 REV. D
SIZE D
SCALE
SHEET 1 OF 2
DATE 3/23/78
BY
CHECKED
APP'D
STOCK AS
NEXT ASSY.
MODEL NO.
FINISH
APPLICATION
D03309200

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A1	PWB ASSY, A1, 808A,B,-11	D03309200
C1	CAPACITOR,TANT 220MF 20% 30V	902710227
C2	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C3	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C4	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C5	CAPACITOR,TANT 220MF 20% 30V	902710227
C6	CAPACITOR,TANT 220MF 20% 30V	902710227
C8	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C9	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C10	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C11	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C12	CAPACITOR,ELECTROLYTIC NON-POLAR 15MF 150V	903300156
C13	CAPACITOR,ELECTROLYTIC NON-POLAR 15MF 150V	903300156
C14	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C15	CAPACITOR,TANT 15MF 30V 20%	902710156
C16	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C17	CAPACITOR,TANT 220MF 20% 30V	902710227
C18	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C19	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C20	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C21	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C22	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C23	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C24	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C25	CAPACITOR,MICA 10PF + 5%,500VDCW	901900100
CR1	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR2	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR3	DIODE,SI,IN4148,75V,150MA,500MW	910504148
DS1	DISPLAY,RED, 7 SEGMENT, HIGH EFFICIENCY	910507656
DS2	DISPLAY,RED, 7 SEGMENT, HIGH EFFICIENCY	910507653
DS3	DISPLAY,RED, 7 SEGMENT, HIGH EFFICIENCY	910507653
DS4	DISPLAY,RED, 7 SEGMENT, HIGH EFFICIENCY	910507653
DS5	DISPLAY,RED, 7 SEGMENT, HIGH EFFICIENCY	910507653
DS6	LED,10MADC,120MW	910504684
DS7	LED,10MADC,120MW	910504684
J2	SOCKET	914800061
J4	CONNECTOR, 3 PIN	914800289
J5	CONNECTOR, 3 PIN 90 DEGREES	914800273
J6	JACK,MICRO,3PIN .1011D,MDPC-2A-RA	914400039
J7	CONNECTOR,CUFF LINK	C03328800
J8	CONNECTOR,CUFF LINK	C03328800
L1	COIL,SHIELDED RF, 22UH 10% 11W	909200139
L2	COIL,SHIELDED RF, 22UH 10% 11W	909200139
L3	COIL,SHIELDED RF, 22UH 10% 11W	909200139
L4	COIL,SHIELDED RF, 22UH 10% 11W	909200139
L5	COIL,SHIELDED RF, 22UH 10% 11W	909200139
L6	COIL,SHIELDED RF, 22UH 10% 11W	909200139
L7	COIL,SHIELDED RF, 22UH 10% 11W	909200139
L8	COIL,SHIELDED RF, 22UH 10% 11W	909200139
LS1	SPEAKER, 8 OHM 1.5 DIA	921400006
Q1	TRANSISTOR,MPSD54	910300540

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY, A1, 808A, B, -11 (Continued)	
Q2	TRANSISTOR, UPTB 550	910307550
Q3	TRANSISTOR,SI,2N5655,NPN	910305655
R1	RESISTOR COMP,10K OHM,1/4W,5%	906900103
R2	PCT,DPST ROTARY SWITCH, 10K OHM 20%	907920103
R3	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
R4	PCT,WIREWOUND, 10K OHM 5%	907930103
R5	RESISTOR COMP,10K OHM,1/4W,5%	906900103
R6	RESISTOR COMP,10K OHM,1/4W,5%	906900103
R7	RESISTOR MET FILM 49.9K OHM 1% 1/8W	907304992
R8	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R9	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R10	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R11	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R12	RESISTOR MET FILM 5.11K OHM 1% 1/8W	907305111
R13	RESISTOR MET FILM 5.11K OHM 1% 1/8W	907305111
R14	RESISTOR,MET FILM 6.43K OHM 1% 1/8W	907306341
R15	RESISTOR MET FILM 5.11K OHM 1% 1/8W	907305111
R16	RESISTOR,MET FILM 17.8K OHM 1% 1/8W	907301782
R17	RESISTOR,PRECISION FILM 604 OHM 1% 4W	907806040
R18	RESISTOR,PRECISION FILM 301 OHM 1% 2W	907803010
R19	RESISTOR,PRECISION FILM 301 OHM 1% 2W	907803010
R20	RESISTOR,MET FILM 150 OHM 1% 1W	907611500
R21	RESISTOR,PRECISION FILM 301 OHM 1% 2W	907803010
R22	RESISTOR,MET FILM 150 OHM 1% 1W	907611500
R23	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R24	RESISTOR,MET FILM 365K OHM 1% 1/8W	907303653
R25	RESISTOR,MET FILM 30.1K OHM 1% 1/8W	907303012
R26	RESISTOR MET FILM 249K OHM 1/8W 1%	907302493
R27	RESISTOR MET FILM 10 OHM 1% 1/8W	907310100
R28	RESISTOR MET FILM 511 OHM 1% 1/8W	907305110
S1	ASSY, ROTARY SWITCH,12POS 2POLE 1SEC PWBMTG	C03291501
S2	SWITCH,ROCKER, 4P2T 5A PC MTG	911000095
S3	SWITCH,PUSHBUTTON, 3P2T 1A PWB MTG	911300072
S4	SWITCH,ROCKER, 2P2T 5A PC MTG	911000096
Tw1	THUMBWHEEL	922000007
Tw2	THUMBWHEEL	922000007
U1	IC,MC14543B,BCD-7 SEG LATCH/DECODER/DRIVER	920214543
U2	RESISTOR,ISOLATED NETWORK 4.7K OHM 2% 0.2W	920880472
U3	RESISTOR,ISOLATED NETWORK 4.7K OHM 2% 0.2W	920880472
U4	RESISTOR,COM JUNC NETWORK 2.2K OHM 2% 0.2W	920610222
U5	IC,ULN2032A	920302032
U6	IC,FS2719M,DIODE ARRAY	920302719
U7	IC,MC14015B,DUAL 4 BIT STATIC SHIFTREGISTER	920214015
U8	IC,MM74C907,HEX OPEN DRAIN P-CHANNEL BUFFER	920274907
U9	IC,MC1416,QUAD ANALOG SWITCH/MULTIPLEXER	920201416
U10	IC,MM74C373,OCTAL LATCH	920274373
U11	IC,MM74C373,OCTAL LATCH	920274373
U12	RESISTOR,COM JUNC NETWORK 22K OHM 2% 0.2W	920680223
U13	RESISTOR,COM JUNC NETWORK 22K OHM 2% 0.2W	920680223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REVISIONS
ZONE LTR DESCRIPTION DATE APPROVED
SEE SHEET 1
U4
2.2K
U1 VDD PH
U2 4.7K
U3 4.7K
U5 VEE
SUB
C23 0.1
Q1 MPSA54
+5V
D0
D1
D2
D3
D4
PART OF J2
BL
DEC
DSTB
CLEAR
DS5
DS4
IN1
SEE A SHEET 1
L1 220
L6 220
L3 220
L4 220
L5 220
L2 220
L7 220
L8 220
DS1
DS2
DS3
DS4
DS5
U24
DS6 dB
DS7 HZ
CR3 IN4148
C1 220 30V
U7
U8
U9
NC
U12 22K
U13 22K
U10
VSS LE VDD
XMT LEV
XMT 1004
SWEEP
SWEEP HOLD
FREQ
LEV
RLEV
S/N
DIAL
NTG
3xHZ
C-NOTCH
S1
PART OF S2
S3
900
600
S69
SST
U11
LE VDD
VSS
PART OF J2
IN2
DO
D1
D2
D3
D4
D5
D6
D7
QTY QTY QTY ITEM NO. PART OR IDENTIFYING NO. DESCRIPTION OR NOMENCLATURE MATERIAL SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST
DO NOT SCALE DWG.
Sierra
LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION MENLO PARK CALIFORNIA
CODE IDENT. NO. 54778
SCHEMATIC DIAGRAM
A1
DISPLAY/SELECTOR BOARD
SIZE D
DRAWING NO D03309200
REV D
SHEET 2 OF 2
D03309200

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY, A1, 808A, B, -11 (Continued)	
U14	IC,LM386N,LOW VOLTAGE AUDIO POWER AMP	920300386
U15	IC,TL082,DUAL J-FET INPUT OPERATIONAL AMP	920310082
U16	IC,LH0002C,CURRENT AMP	920310002
U17	IC,LH0002C,CURRENT AMP	920310002
U18	IC,CD4049BE,HEX BUFFER/CONVERTER	920204049
U19	IC,UA78MG,ADJUSTABLE POS VOLTAGE REGULATOR	920310078
U20	IC,UA79MG,ADJUSTABLE NEG VOLTAGE REGULATOR	920310079
U21	IC,UA79MG,ADJUSTABLE NEG VOLTAGE REGULATOR	920310079
U22	DIODE,DUAL IN-LINE BRIDGE,VM68,6COPIV 25A	910800068
U23	IC,LM4250CN,PROGRAMMABLE OPERATIONAL AMP	920304250
U24	IC,FS2719M,DIODE ARRAY	920302719
VP1	SURGE VOLTAGE PROTECTOR, GAS FILLED 90V 25%	913100005
VR1	DIODE,1N5357, 20V 5W 20%	910505357
VR2	DIODE,MZ4622	910504622

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NOTES - UNLESS OTHERWISE SPECIFIED:

1. ALL RESISTANCE VALUES ARE IN OHMS
2. ALL RESISTORS ARE 1/8W, ± 1%
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS
4. ▽ DENOTES GROUND RETURN
5. ALL DIODES ARE 1N4148
6. ▽ DENOTES GROUND REFERENCE

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	A	PILOT RUN RELEASE		
	A1	PER PCO 2663 & 2662		
	B	PRODUCTION RELEASE		
	B1	ECO 17106		
	C	ECO 17130		
	D	ECO 18015		

RESET / DMA OUT / INTERRUPT CONTROL

MICRO PROCESSOR

RANGE / SIGNAL INTERFACE

INPUT OUTPUT SELECT

READ ONLY MEMORY (ROM)

R1 10M 1/4W ±5%

C1 10PF

Y1 1.048576 MHZ

C2 39PF

C3 82PF

R2 22K 1/4W ±5%

PART OF J1

RING C
RING 4
GAIN 0
GAIN 1
SPARE
NOTCH
FILTER 0
FILTER 1
SIG 0
SIG 1

OTCT 0
DTCT 1
DTCT 2

DS5
S3
DREQ
S2
EF3
OT7
CLEAR

CLK
+5V
Q
EF1
EF2
EF3
EF4
DMA IN
DMA OUT
CLEAR

NO
N1
N2
MRD
MWR
A0 A1 A2 A3 A4 A5 A6 A7
TPA
TPB
SCO
SCI

TPB
SCO
SCI

OT1 NC
OT6 NC
SO NC
S1 NC

ADDRESS BUS (8)
DATA BUS (3)
CONTROL BUS

SEE SHEET 2

IC POWER PIN-OUT										
REF DESIG	TYPE	+5	GND	REF DESIG	IC TYPE	+5	GND			
U4	14069	14	7	U21	4040	16	8			
U5	74C42	16	8	U22	4520	16	8			
U6	74C42	16	8	U23	4528	16	8			
U7	14011	14	7	U24	4024	14	7			
U8	74C74	14	7	U25	4024	14	7			
U9	14001	14	7	U26	74C374	20	10			
U12	TL084			U27	74C374	20	10			
U13	AD7550			U28	74C373	20	10			
U14	1802	40,16	20	U29	74C374	20	10			
U15	1633	24	12	U30	74C374	20	10			
U16	4556	16	8	U32	74C107	14	7			
U17	4013	14	7	U33	4046	16	8			
U18	4520	16	8	U34	1831	24	12			
U19	7531P			U1	AD536J			U10	TL084	
U20	7531K			U2	AD580L			U3	14051	

QTY	QTY	QTY	QTY	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
						LIST OF MATERIAL OR PARTS LIST		

ALL THREADS UNIFIED SERIES, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B AFTER PLATING, UNLESS OTHERWISE SPECIFIED

▽ FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED.

REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DWG.

DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS UNLESS OTHERWISE SPECIFIED

TOLERANCE UNLESS SPECIFIED

BASIC	TWO PLACE	THREE PLACE
UP TO 6	± .02	±
6 TO 24	± .03	±
ABOVE 24	± .06	±
ANGULAR DIMENSION	±	

FINISH:

Sierra

LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION MONTEREY PARK, CALIFORNIA 91754

CODE IDENT. NO. 54778

SCHEMATIC DIAGRAM A2 MICROPROCESSOR

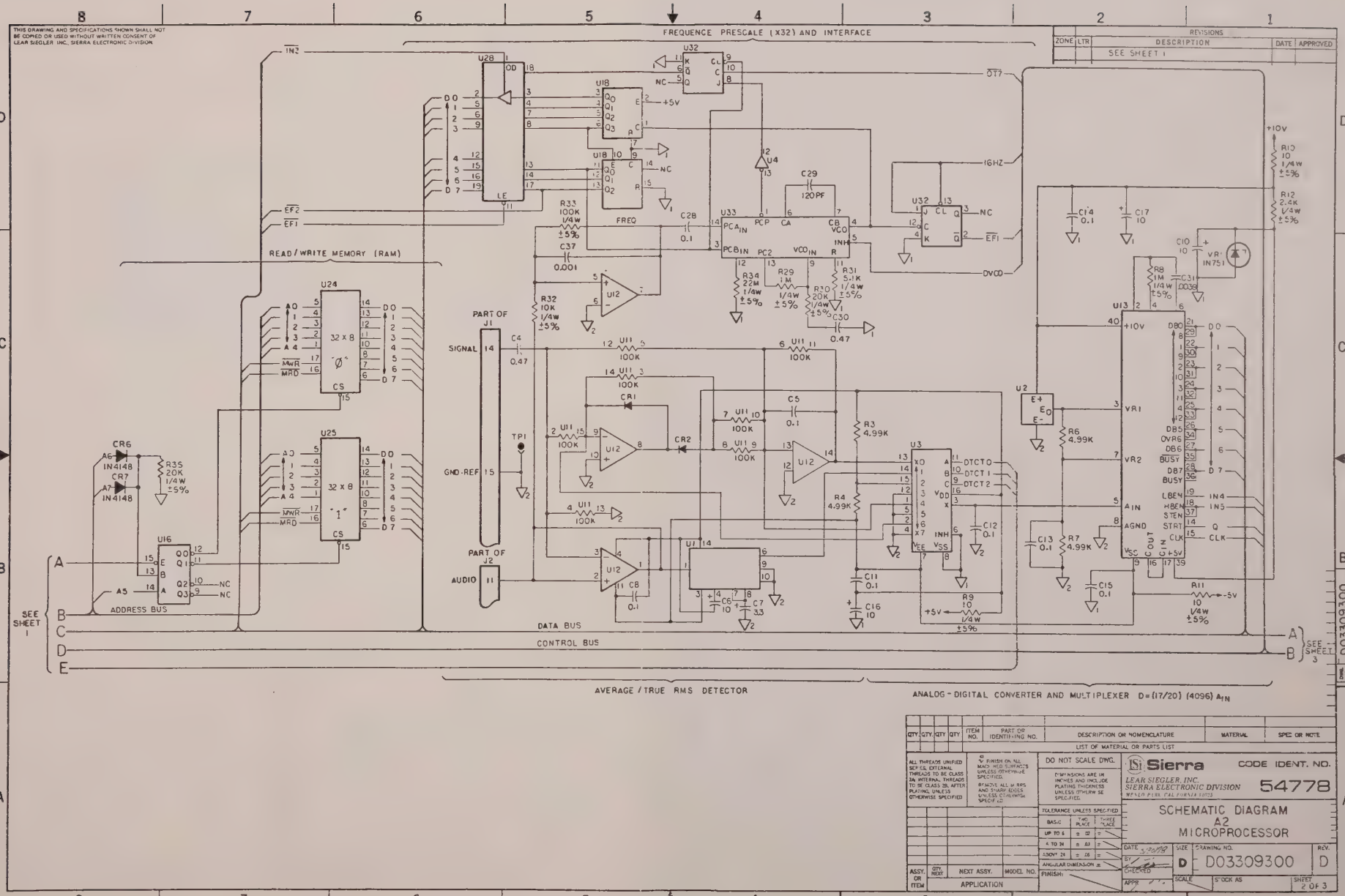
ASSY. OR ITEM	QTY NEXT	NEXT ASSY.	MATL. NO.
	REF		8085
	REF		8080A
		APPLICATION	

DATE	SIZE	DRAWING NO.	REV.
3/30/78	D	D03309300	D
BY	SCALE	STOCK AS	SHEET 1 OF 3
CHECKED			
APPD			

D03309300

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A2	PWB ASSY, A2, 808A,B,-11	D03309300
C1	CAPACITOR,MICA 10PF + 5%,500VDCW	901900100
C2	CAPACITOR,DIPPED MICA 39PF 5% 500V	901900390
C3	CAPACITOR,DIPPED MICA 82PF 2% 500V	901900820
C4	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C5	CAPACITOR,MET POLYCARB 0.1MF 10% 50V	903120104
C6	CAPACITOR,TANT 10MF 20% 10V	902760106
C7	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C8	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C10	CAPACITOR,TANT 10MF 20% 10V	902760106
C11	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C12	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C13	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C14	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C15	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C16	CAPACITOR,TANT 10MF 20% 10V	902760106
C17	CAPACITOR,TANT 10MF 20% 10V	902760106
C19	CAPACITOR,CERAMIC,1000PF,10%,200V	901320102
C20	CAPACITOR,DIPPED MICA 120PF 5% 500V	901900121
C21	CAPACITOR,CERAMIC 2200 PF 5% 100V	901400222
C22	CAPACITOR,CERAMIC 2200 PF 5% 100V	901400222
C23	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C25	CAPACITOR,TANT 10MF 20% 10V	902760106
C26	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C28	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C29	CAPACITOR,DIPPED MICA 120PF 5% 500V	901900121
C30	CAPACITOR,MET POLYCARB 0.47MF 10% 50V	903100474
C31	CAPACITOR,POLYPROBYLENE .0039MF 10% 200V	901100392
C32	CAPACITOR,TANT 10MF 20% 10V	902760106
C33	CAPACITOR,TANT 10MF 20% 10V	902760106
C34	CAPACITOR,TANT 10MF 20% 10V	902760106
C37	CAPACITOR,CERAMIC,1000PF,10%,200V	901320102
C38	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C39	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
CR1	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR2	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR3	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR4	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR5	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR6	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR7	DIODE,SI,IN4148,75V,150MA,500MW	910504148
Q1	TRANSISTOR,2N5640,N-CHANNEL FIELD EFFECT	910305640
R1	RESISTOR,COMP,10 MEG OHM,5% 1/4W	906900106
R2	RESISTOR,FXD,COMP,22K OHM 1/4W 5%	906900223
R3	RESISTOR,FILM,METAL,4.99K OHM,1/8W,1%	907304991
R4	RESISTOR,FILM,METAL,4.99K OHM,1/8W,1%	907304991
R6	RESISTOR,FILM,METAL,4.99K OHM,1/8W,1%	907304991
R7	RESISTOR,FILM,METAL,4.99K OHM,1/8W,1%	907304991
R8	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY, A2, 808A, B, -11 (Continued)	
R9	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
R10	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
R11	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
R12	RESISTOR COMP 2.4K OHM 5% 1/4W	906900242
R13	RESISTOR COMP,10K OHM,1/4W,5%	906900103
R14	RESISTOR MET FILM 3.16K OHM 1% 1/8W	907303161
R15	RESISTOR MET FILM 6.65K OHM 1% 1/8W	907306651
R16	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R17	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R18	RESISTOR MET FILM 49.9K OHM 1% 1/8W	907304992
R19	RESISTOR,MET FILM 30.1K OHM 1% 1/8W	907303012
R20	RESISTOR,COMP 680K OHM 1/4W 5%	906900684
R21	RESISTOR COMP 20K OHM 5% 1/4W	906900203
R22	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R23	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R24	RESISTOR,FXD,COMP 100 OHM 1/4W 5%	906900101
R25	RESISTOR MET FILM 6.04K OHM 1% 1/8W	907306041
R26	POT, 20K OHM 10% 1/2W	907920203
R27	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
R28	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
R29	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R30	RESISTOR COMP 20K OHM 5% 1/4W	906900203
R31	RESISTOR,FXD,COMP,5.1K OHM 1/4W 5%	906906512
R32	RESISTOR COMP,10K OHM,1/4W,5%	906900103
R33	RESISTOR,FXD,COMP 100K OHM 1/4W 5%	906900104
R34	RESISTOR,COMP 22M OHM 5% 1/4W	906900226
R35	RESISTOR COMP 20K OHM 5% 1/4W	906900203
R36	RESISTOR,COMP 30M OHM 5% 1/4W	906900306
U1	IC,AD536,TRUE RMS TO DC CONVERTER	920300536
U2	IC,AD580,LOW DRIFT VOLTAGE REFERENCE	920310580
U3	IC,MC14051B,ANALOG MULTIPLEXR/DEMULTIPLEXER	920214051
U4	IC,4069PC,HEX INVERTER	920204069
U5	IC,MM74C42,BCD TO DECIMAL DECODER	920207442
U6	IC,MM74C42,BCD TO DECIMAL DECODER	920207442
U7	IC,CD4011BE,CMOS QUAD 2 INPUT NAND GATE	920204011
U8	IC,MM74C74,DUAL D FLIP-FLOP	920207474
U9	IC,CD4001BE,QUAD 2 INPUT NOR GATE	920204001
U10	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U11	RESISTOR,ISOLATED NETWORK 100K OHM 1% 1/8W	920816104
U12	IC,TL084ACN,J-FET INPUT CLOSE TOLER. OP AMP	920320084
U13	IC,AD7550,13-BIT MONOLITHIC A/D CONVERTER	920207550
U14	IC,CDP1802CD	920201802
U15	IC,CDP1833CD,ROM 87116 AC3312000	920201833
U16	IC,MC14556B,DECODER/DEMULTIPLEXER	920214556
U17	IC,MC14013BCP,CMOS DUAL D-TYPE FLIP-FLOP	920204013
U18	IC,MC14520B,DUAL BINARY UP COUNTER	920214520
U19	IC,AD7531,MULTIPLYING D/A CONVERTER	920207531
U20	IC,AD7531,MULTIPLYING D/A CONVERTER	920207531
U21	IC,CD4040BE,CMOS BINARY COUNTER	920204040


FREQUENCE PRESCALE (x32) AND INTERFACE
READ/WRITE MEMORY (RAM)
AVERAGE / TRUE RMS DETECTOR
ANALOG - DIGITAL CONVERTER AND MULTIPLEXER D=(17/20) (4096) AIN
ADDRESS BUS
DATA BUS
CONTROL BUS
SEE SHEET 1
SEE SHEET 3
PART OF J1
PART OF J2
SIGNAL
GND-REF
AUDIO
TP1
FREQ
32 x 8
CS
+10V
+5V
-5V
DVCO
16HZ
EFI
EF2
EF1
IN2
OT7
DTCT0
DTCT1
DTCT2
IN4
IN5
Q
CLK
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LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION
CODE IDENT. NO. 54778
SCHEMATIC DIAGRAM
A2
MICROPROCESSOR
DRAWING NO. D03309300
REV. D
SIZE D
SHEET 2 OF 3
D03309300

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY, A2, 808A, B, -11 (Continued)	
U22	IC,MC14520B,DUAL BINARY UP COUNTER	920214520
U23	IC,MC14528B,DUAL FLIP-FLOP	920214528
U24	IC,CDP1824CD	920201824
U25	IC,CDP1824CD	920201824
U26	IC,MM74C374,OCTAL D-TYPE FLIP-FLOP	920274374
U27	IC,MM74C374,OCTAL D-TYPE FLIP-FLOP	920274374
U28	IC,MM74C373,OCTAL LATCH	920274373
U29	IC,MM74C374,OCTAL D-TYPE FLIP-FLOP	920274374
U30	IC,MM74C374,OCTAL D-TYPE FLIP-FLOP	920274374
U32	IC,MM74C107,DUAL J-K FLIP-FLOP	920274107
U33	IC,MC14046B,PHASE LOCK LOOP CMOS	920214046
U34	IC,CDP1831CD,4096 BIT ROM	920211831
VR1	DIODE,ZENER,1N751A,5.1V,5% 400MW	910630751
Y1	CRYSTAL,1.048576 MHZ	912200213

THIS DRAWING AND SPECIFICATIONS SHOWN SHALL NOT BE COPIED OR USED WITHOUT WRITTEN CONSENT OF LEAR SIEGLER, INC., SIERRA ELECTRONIC DIVISION.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

DIGITALLY CONTROLLED SINE OSCILLATOR

OSCILLATOR INTERFACE

DISPLAY TIMER/LATCH/GATING

TIME BASE

SEE SHEET 2 (A, B)

DATA BUS

CONTROL BUS

QTY.	QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
						LIST OF MATERIAL OR PARTS LIST		

ALL THREADS UNIFIED SERIES, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B, AFTER PLATING, UNLESS OTHERWISE SPECIFIED

63 FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED

REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED.

DO NOT SCALE DWG.

DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS UNLESS OTHERWISE SPECIFIED.

TOLERANCE UNLESS SPECIFIED		
BASIC	TWO PLACE	THREE PLACE
UP TO 6	± .02	±
6 TO 24	± .03	±
ABOVE 24	± .06	±
ANGULAR DIMENSION ±		

FINISH:

Sierra — LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION, MENLO PARK, CALIFORNIA 94025

CODE IDENT. NO. 54778

SCHEMATIC DIAGRAM
A2
MICROPROCESSOR

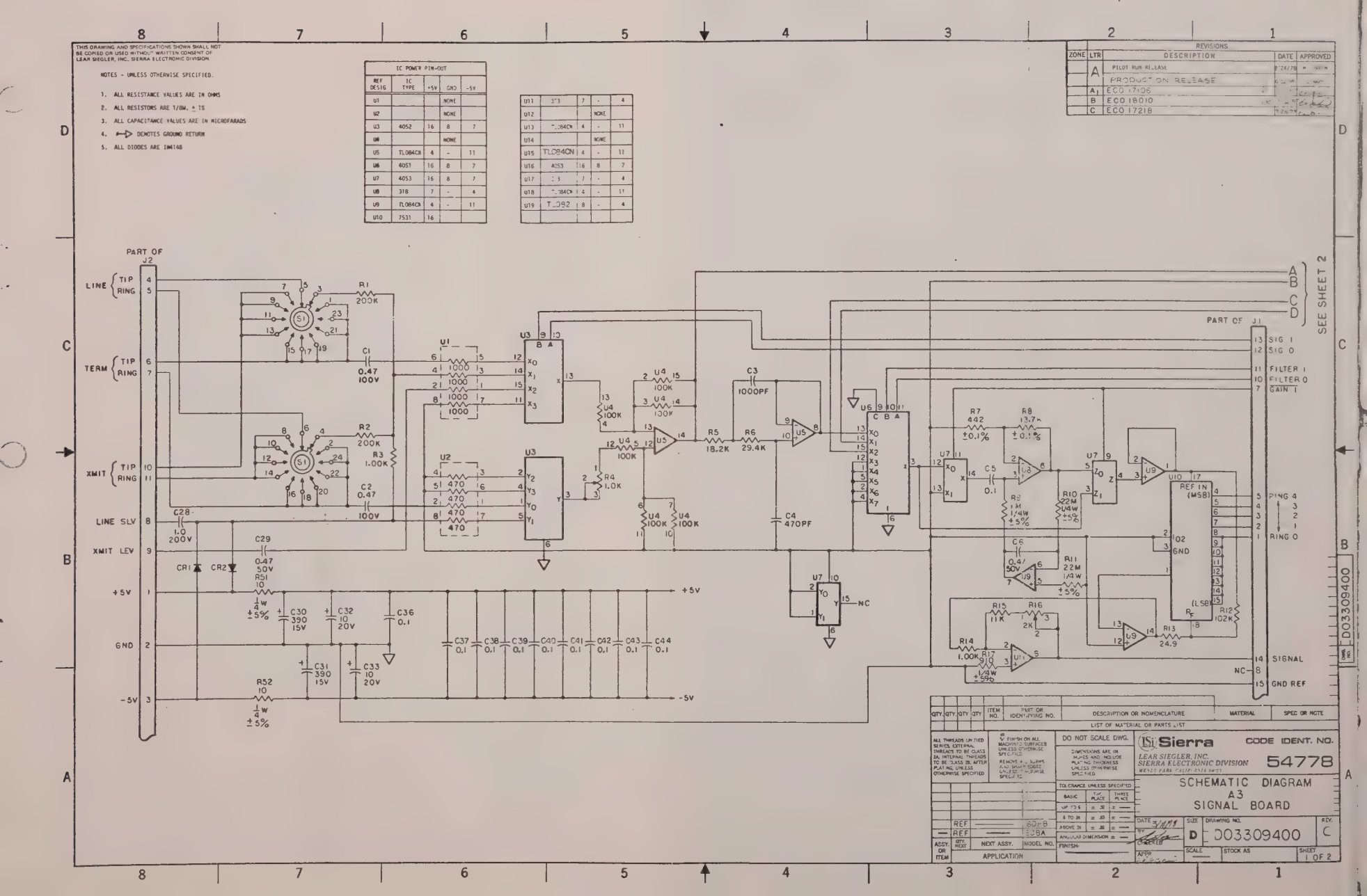
ASSY. OR ITEM	QTY REQT	NEXT ASSY.	MODEL NO
		APPLICATION	

DATE 12-1-75 | BY | CHECKED | APPR

SIZE D | DRAWING NO. D03093300 | REV D

SCALE | STOCK AS | SHEET 3 OF 3

D03093300


THIS DRAWING AND SPECIFICATIONS SHOWN SHALL NOT BE COPIED OR USED WITHOUT WRITTEN CONSENT OF LEAR SIEGLER, INC., SIERRA ELECTRONIC DIVISION
NOTES - UNLESS OTHERWISE SPECIFIED.
1. ALL RESISTANCE VALUES ARE IN OHMS
2. ALL RESISTORS ARE 1/8W, ± 1%
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS
4. DENOTES GROUND RETURN
5. ALL DIODES ARE 1N4148
IC POWER PIN-OUT
REF DESIG | IC TYPE | +5V | GND | -5V
U1 | | | NONE |
U2 | | | NONE |
U3 | 4052 | 16 | 8 | 7
U4 | | | NONE |
U5 | TL084CN | 4 | - | 11
U6 | 4051 | 16 | 8 | 7
U7 | 4053 | 16 | 8 | 7
U8 | 318 | 7 | - | 4
U9 | TL084CN | 4 | - | 11
U10 | 7531 | 16 |
U11 | 353 | 7 | - | 4
U12 | | | NONE |
U13 | TL084CN | 4 | - | 11
U14 | | | NONE |
U15 | TL084CN | 4 | - | 11
U16 | A553 | 16 | 8 | 7
U17 | 353 | 7 | - | 4
U18 | TL084CN | 4 | - | 11
U19 | TL082 | 8 | - | 4
REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVED
A | PILOT RUN RELEASE | 9/24/78
PRODUCTION RELEASE
A1 | ECO 17105
B | ECO 18010
C | ECO 17218 | 12/4/79
PART OF J2
LINE TIP 4 RING 5
TERM TIP 6 RING 7
XMIT TIP 10 RING 11
LINE SLV 8
XMIT LEV 9
+5V 1
GND 2
-5V 3
R1 200K
R2 200K
R3 1.00K
R4 1.0K
R5 18.2K
R6 29.4K
R7 442 ±0.1%
R8 13.7K ±0.1%
R9 1M 1/4W ±5%
R10 22M 1/4W ±5%
R11 22M 1/4W ±5%
R12 102K
R13 24.9
R14 1.00K
R15 11K
R16 2K
R17 9.0 1/4W ±5%
R51 10 1/4W ±5%
R52 10 1/4W ±5%
C1 0.47 100V
C2 0.47 100V
C3 1000PF
C4 470PF
C5 0.1
C6 0.47 50V
C28 1.0 200V
C29 0.47 50V
C30 390 15V
C31 390 15V
C32 10 20V
C33 10 20V
C36 0.1
C37 0.1
C38 0.1
C39 0.1
C40 0.1
C41 0.1
C42 0.1
C43 0.1
C44 0.1
CR1
CR2
U1
U2
U3
U4 100K
U5
U6
U7
U8
U9
U10
REF IN (MSB)
(LSB)
GND
NC
PART OF J1
SIG 1
SIG 0
FILTER 1
FILTER 0
GAIN 1
PING 4 3 2 1
RING 0
SIGNAL
GND REF
SEE SHEET 2
A
B
C
D
QTY | QTY | QTY | ITEM NO. | PART OR IDENTIFYING NO. | DESCRIPTION OR NOMENCLATURE | MATERIAL | SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST
ALL THREADS UNLESS OTHERWISE SPECIFIED, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B, AFTER PLATING, UNLESS OTHERWISE SPECIFIED
DO NOT SCALE DWG.
DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS UNLESS OTHERWISE SPECIFIED
TOLERANCE UNLESS SPECIFIED
BASIC | TWO PLACE | THREE PLACE
UP TO 6 | ± .01 | ± —
6 TO 24 | ± .03 | ± —
ABOVE 24 | ± .06 | ± —
ANGULAR DIMENSION ± —
FINISH
Sierra
LEAR SIEGLER, INC.
SIERRA ELECTRONIC DIVISION
MENLO PARK, CALIF. 94025
CODE IDENT. NO. 54778
SCHEMATIC DIAGRAM
A3
SIGNAL BOARD
DRAWN 3/1979
CHECKED
APPR
SIZE D
DRAWING NO. D03309400
REV. C
SCALE
STOCK AS
SHEET 1 OF 2
REF 80E-B
REF 338A
ASSY. OR ITEM
QTY. REQ'
NEXT ASSY.
MODEL NO.
APPLICATION
D03309400

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A3	PWB ASSY, A3, 808A,B	D03309400
C1	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C2	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C3	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C4	CAPACITOR,DIPPED MICA 470PF 2% 500V	901920471
C5	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C6	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C7	CAPACITOR,CERAMIC NPO 0.001MF 5% 100V	901440102
C8	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C9	CAPACITOR,CERAMIC NPO 0.001MF 5% 100V	901440102
C10	CAPACITOR,CERAMIC NPO 0.001MF 5% 100V	901440102
C12	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C13	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C14	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C15	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C16	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C17	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C18	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C19	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C20	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C21	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C22	CAPACITOR,DIPPED MICA 390PF 2% 500V	901910391
C23	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C24	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C25	CAPACITOR,DIPPED MICA 33PF 2% 500V	901900330
C26	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C27	CAPACITOR,DIPPED MICA 470PF 2% 500V	901920471
C28	CAPACITOR,MET POLYCARB 1MF 5% 100V	903120105
C29	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C30	CAPACITOR,TANT 390MF 20% 15V	902700397
C31	CAPACITOR,TANT 390MF 20% 15V	902700397
C32	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C33	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C36	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C37	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C38	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C39	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C40	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C41	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C42	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C43	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C44	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
CR1	DIODE,1N4148	914804148
CR2	DIODE,1N4148	914804148
J1	SOCKET	914200061
J2	SOCKET	914200061
R1	RESISTOR MET FILM 200K OHM 1% 10W	907302003
R2	RESISTOR MET FILM 200K OHM 1% 10W	907302003
R3	RESISTOR,FXD,FILM 1.0K OHM 1/8W 1%	907301001
R4	POT, 500 OHM 1/4W	907920102

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY, A3, 808A, B (Continued)	
R5	RESISTOR,MET FILM 18.2K OHM 1% 108W	907301822
R6	RESISTOR,MET FILM 29.4K OHM 1% 1/8W	907302942
R7	RESISTOR,MET FILM 442 OHM 0.1% 1/8W	907704420
R8	RESISTOR,MET FILM 13.7K OHM 0.1% 1/8W	907711372
R9	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R10	RESISTOR,COMP 22M OHM 5% 1/4W	906900226
R11	RESISTOR,COMP 22M OHM 5% 1/4W	906900226
R12	RESISTOR,MET FILM 102K OHM 1% 1/8W	907301023
R13	RESISTOR,MET FILM 24.9 OHM 1% 1/8W	907324R90
R14	RESISTOR,FXD,FILM 1.0K OHM 1/8W 1%	907301001
R15	RESISTOR MET FILM 11.5K OHM 1% 1/8W	907301152
R16	PCT, 500 OHM 1/4W	907920102
R17	RESISTOR,COMP 910 OHM 1/4W 5%	906900911
R18	RESISTOR,MET FILM 39.2K OHM 1/8W 1%	907303922
R19	RESISTOR,MET FILM 39.2K OHM 1/8W 1%	907303922
R20	RESISTOR,MET FILM 53.6K OHM 1% 1/8W	907305362
R21	PCT, 20K OHM 10% 1/2W	907930203
R22	RESISTOR,MET FILM 18.2K OHM 1% 108W	907301822
R23	RESISTOR,MET FILM 22.6K OHM 1/8W	907302262
R24	RESISTOR,MET FILM 133K OHM 1% 1/8W	907301333
R25	PCT, 20K OHM 10% 1/2W	907930203
R26	RESISTOR MET FILM 22.1K OHM 1% 1/8W	907302212
R27	RESISTOR,MET FILM 17.8K OHM 1% 1/8W	907301782
R28	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R29	PCT, 20K OHM 10% 1/2W	907930203
R30	RESISTOR,MET FILM 442 OHM 0.1% 1/8W	907704420
R31	RESISTOR,MET FILM 13.7K OHM 0.1% 1/8W	907711372
R32	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R33	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R34	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R35	RESISTOR,MET FILM 78.7K OHM 1% 1/8W	907307872
R36	RESISTOR,MET FILM 21.0K OHM 1% 1/8W	907302102
R37	RESISTOR,MET FILM 383K OHM 1% 1/8W	907303833
R38	RESISTOR,FXD,FILM 10K OHM 1/8W 1%	907301002
R39	RESISTOR,MET FILM 39.2K OHM 1/8W 1%	907303922
R40	RESISTOR,MET FILM 48.7K OHM 1% 1/8W	907304872
R41	RESISTOR,MET FILM 48.7K OHM 1% 1/8W	907304872
R42	RESISTOR,MET FILM 78.7K OHM 1% 1/8W	907307872
R43	RESISTOR,MET FILM 78.7K OHM 1% 1/8W	907307872
R44	RESISTOR,FILM,METAL,5.49K OHM,1/8W,1%	907305491
R45	RESISTOR,MET FILM 178K OHM 1% 1/8W	907301783
R46	RESISTOR,MET FILM 287K OHM 1/8W 1%	907302873
R47	RESISTOR MET FILM 49.9K OHM 1% 1/8W	907304992
R49	RESISTOR MET FILM 60.4K OHM 1% 1/8W	907306042
R50	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R51	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
R52	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
S1	SWITCH,12POS 2 POLE 30 DEGREE PWB MTG	911210289
U1	RESISTOR,ISOLATED NETWORK 1K OHM 2% 1/8W	920880102

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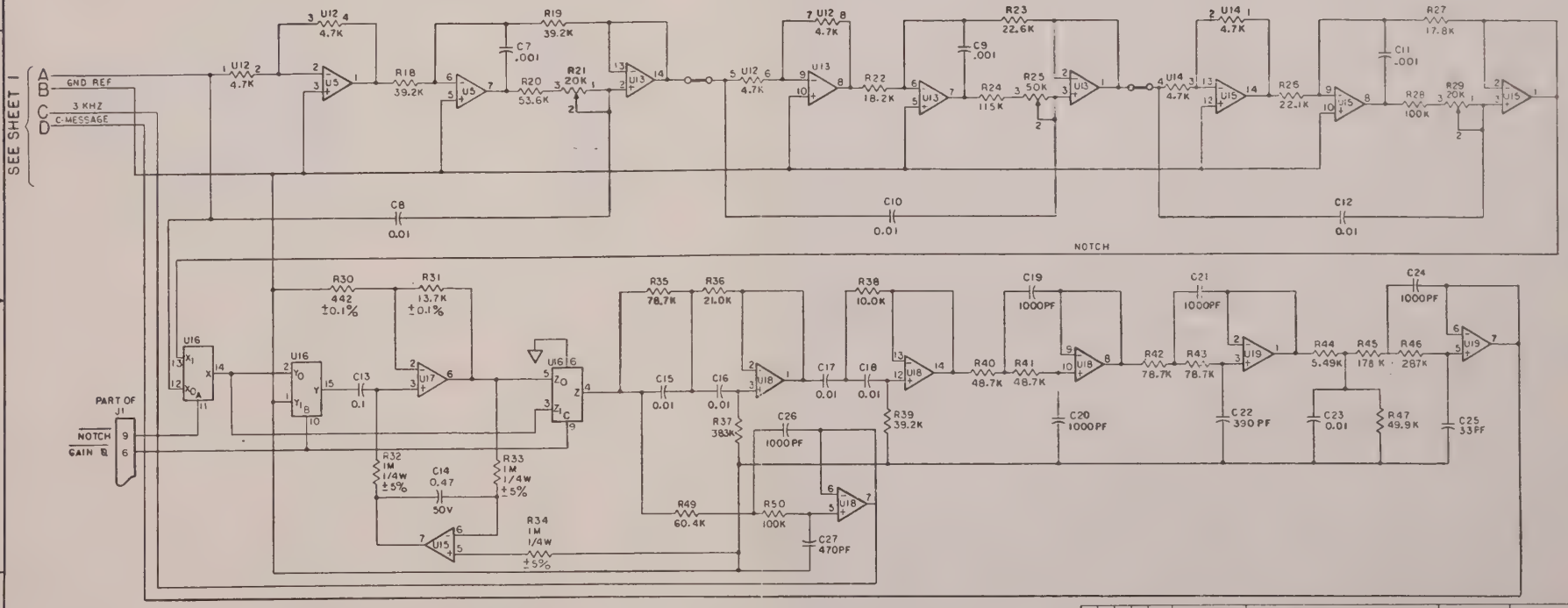
REVISIONS			
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	-	SEE SHEET 1	-	-



QTY.	QTY.	QTY.	ITEM NO.	PART OR IDENT. DWG. NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE

LIST OF MATERIAL OR PARTS LIST

ALL THREADS UNIFIED SERIES, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 2B, AFTER PLATING, UNLESS OTHERWISE SPECIFIED

FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DWG.

DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS UNLESS OTHERWISE SPECIFIED

TOLERANCE UNLESS SPECIFIED

	BASIC	TWO PLACE	THREE PLACE
UP TO 6	± .12	± .1	
6 TO 24	± .25	± .2	
ABOVE 24	± .38	± .3	
ANGULAR DIMENSION		± 1°	

REF —— 4088
REF —— 3084

ASSY. OR ITEM | NEXT ASSY | MODEL NO

APPLICATION

FINISH

Sierra

LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION

CODE IDENT. NO. 54778

SCHEMATIC DIAGRAM
A3
SIGNAL BOARD

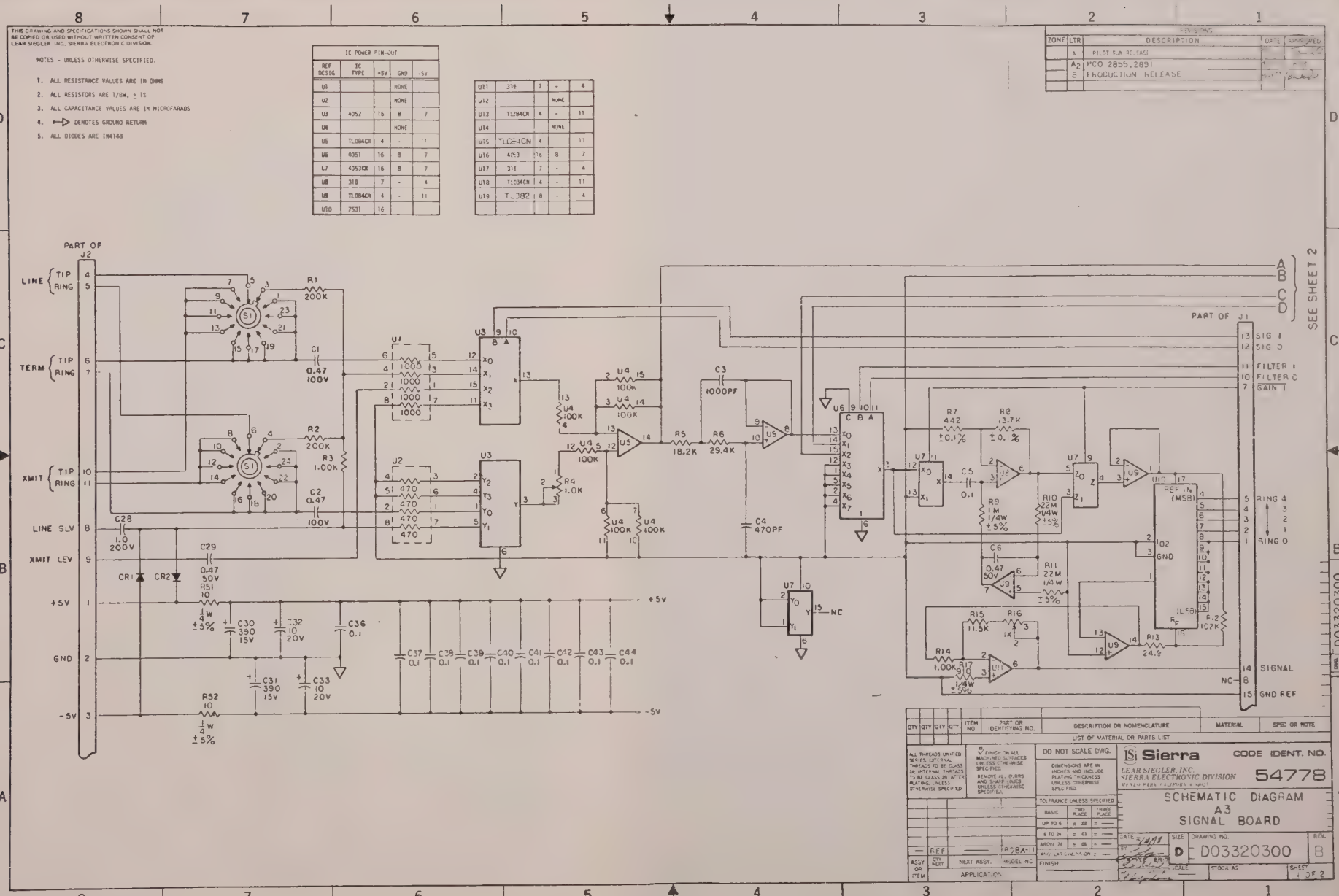
DATE 7-1-70
BY
CHECKED
APPD

SIZE D | DRAWING NO. D03309400 | REV. C

SCALE | STOCK AS | SHEET 2 OF 2

D03309400

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY, A3, 808A, B (Continued)	
U2	RESISTOR,ISOLATED NETWORK 470 OHM 2% 1/8W	920880471
U3	IC,CD4052BE,4 CHANNEL MULTIPLEXER	920204052
U4	RESISTOR,ISOLATED NETWORK 100K OHM 1% 1/8W	920816104
U5	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U6	IC,MC14051B,ANALOG MULTIPLEXR/DEMULTIPLEXER	920214051
U7	IC,MC14053,MULTIPLEXER	920204053
U8	IC,LM318N,OPERATIONAL AMP	920310318
U9	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U10	IC,AD7531,MULTIPLYING D/A CONVERTER	920207531
U11	IC,LM318N,OPERATIONAL AMP	920310318
U12	RESISTOR,ISOLATED NETWORK 4.7K OHM 2% 0.2W	920880472
U13	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U14	RESISTOR,ISOLATED NETWORK 4.7K OHM 2% 0.2W	920880472
U15	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U16	IC,MC14053,MULTIPLEXER	920204053
U17	IC,LM318N,OPERATIONAL AMP	920310318
U18	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U19	IC,TL082,DUAL J-FET INPUT OPERATIONAL AMP	920310082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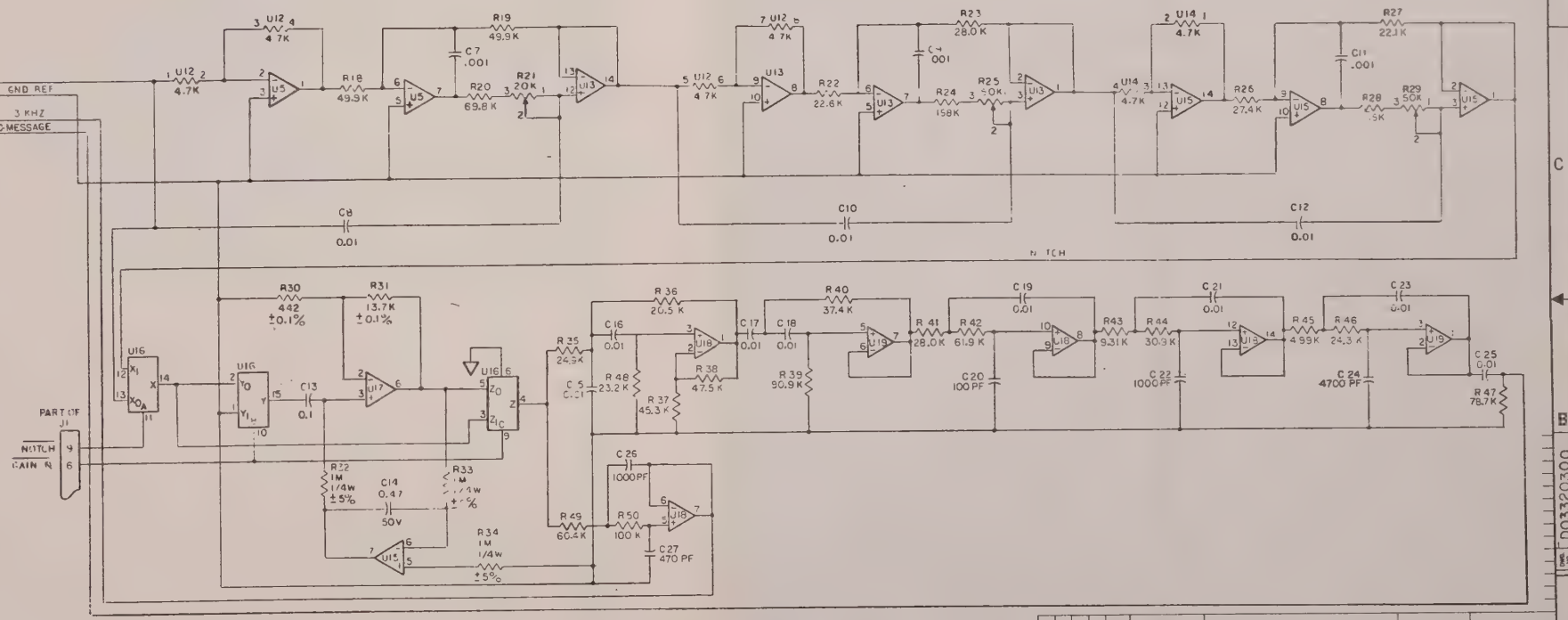
NOTES - UNLESS OTHERWISE SPECIFIED.
1. ALL RESISTANCE VALUES ARE IN OHMS
2. ALL RESISTORS ARE 1/8W, ± 1%
3. ALL CAPACITANCE VALUES ARE IN MICROFARADS
4. DENOTES GROUND RETURN
5. ALL DIODES ARE IN4148
IC POWER PIN-OUT
REF DESIG | IC TYPE | +5V | GND | -5V
U1 | | | NONE |
U2 | | | NONE |
U3 | 4052 | 16 | 8 | 7
U4 | | | NONE |
U5 | TL084CN | 4 | - | 11
U6 | 4051 | 16 | 8 | 7
U7 | 4053CN | 16 | 8 | 7
U8 | 318 | 7 | - | 4
U9 | TL084CN | 4 | - | 11
U10 | 7531 | 16 |
U11 | 318 | 7 | - | 4
U12 | | | NONE |
U13 | TL084CN | 4 | - | 11
U14 | | | NONE |
U15 | TL084CN | 4 | - | 11
U16 | 4051 | 16 | 8 | 7
U17 | 318 | 7 | - | 4
U18 | TL084CN | 4 | - | 11
U19 | TL082 | 8 | - | 4
ZONE LTR DESCRIPTION DATE APPROVED
A PILOT RUN RELEASE
A2 PCO 2855,2891
E PRODUCTION RELEASE
PART OF J2
LINE TIP 4 RING 5
TERM TIP 6 RING 7
XMIT TIP 10 RING 11
LINE SLV 8
XMIT LEV 9
+5V 1
GND 2
-5V 3
R1 200K
R2 200K
R3 1.00K
R4 1.0K
R5 18.2K
R6 29.4K
R7 442 ±0.1%
R8 13.7K ±0.1%
R9 1M 1/4W ±5%
R10 22M 1/4W ±5%
R11 22M 1/4W ±5%
R12 102K
R13 24.9
R14 1.00K
R15 11.5K
R16 1K
R17 10 1/4W ±5%
R51 10 1/4W ±5%
R52 10 1/4W ±5%
C1 0.47 100V
C2 0.47 100V
C3 1000PF
C4 470PF
C5 0.1
C6 0.47 50V
C28 1.0 200V
C29 0.47 50V
C30 390 15V
C31 390 15V
C32 10 20V
C33 10 20V
C36 0.1
C37 0.1
C38 0.1
C39 0.1
C40 0.1
C41 0.1
C42 0.1
C43 0.1
C44 0.1
CR1
CR2
U1 1000 1000 1000 1000
U2 470 470 470 470
U3 4052
U4 100K 100K 100K 100K 100K
U5 TL084CN
U6 4051
U7 4053
U9 TL084CN
U10 7531
U11 318
U12 318
U13 TL084CN
U14 318
U15 TL084CN
U16 4051
U17 318
U18 TL084CN
U19 TL082
REF IN (MSB)
(LSB)
GND
NC
+5V
-5V
PART OF J1
SIG 1
SIG 0
FILTER 1
FILTER 0
GAIN 1
RING 4
RING 3
RING 2
RING 1
RING 0
SIGNAL
GND REF
SEE SHEET 2
QTY QTY QTY QTY ITEM NO PART OR IDENTIFYING NO. DESCRIPTION OR NOMENCLATURE MATERIAL SPEC OR NOTE
LIST OF MATERIAL OR PARTS LIST
DO NOT SCALE DWG.
Sierra
LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION
CODE IDENT. NO. 54778
SCHEMATIC DIAGRAM A3 SIGNAL BOARD
SIZE D DRAWING NO. D03320300 REV. B
SHEET 1 OF 2
D03320300 B

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
A3	PWB ASSY, A3, 808A-11	D03320300
C1	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C2	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C3	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C4	CAPACITOR,DIPPED MICA 470PF 2% 500V	901920471
C5	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C6	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C7	CAPACITOR,CERAMIC NPO 0.001MF 5% 100V	901440102
C8	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C9	CAPACITOR,CERAMIC NPO 0.001MF 5% 100V	901440102
C9	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C10	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C11	CAPACITOR,CERAMIC NPO 0.001MF 5% 100V	901440102
C12	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C13	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C14	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C15	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C16	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C17	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C18	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C19	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C20	CAPACITOR,DIPPED MICA 100PF 2% 500V	901910101
C21	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C22	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C23	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C24	CAPACITOR,DIPPED MICA 4700PF 5% 500V	901900472
C25	CAPACITOR,CERAMIC 0.01MF 5% 100V	901411103
C26	CAPACITOR,DIPPED MICA 1000PF 2% 100V	901930102
C27	CAPACITOR,DIPPED MICA 470PF 2% 500V	901920471
C28	CAPACITOR,MET POLYCARB 1MF 5% 100V	903120105
C29	CAPACITOR,CERAMIC 0.47MF 20% 100V	901320474
C30	CAPACITOR,TANT 390MF 20% 15V	902700397
C31	CAPACITOR,TANT 390MF 20% 15V	902700397
C32	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C33	CAPACITOR,DIPPED TANTLEX 10MF 20% 20VDC	902710106
C36	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C37	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C38	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C39	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C40	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C41	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C42	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C43	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
C44	CAPACITOR,CERAMIC 0.1MF,20%,50V	901300104
CR1	DIODE,SI,IN4148,75V,150MA,500MW	910504148
CR2	DIODE,SI,IN4148,75V,150MA,500MW	910504148
J1	CONNECTOR STRIP, 15 PIN	914800308
J2	CONNECTOR,11 PIN	914200087
R1	RESISTOR MET FILM 200K OHM 1% 108W	907302003
R2	RESISTOR MET FILM 200K OHM 1% 108W	907302003

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY, A3, 808A-11 (Continued)	
R3	RESISTOR,FXD,FILM 1.0K OHM 1/8W 1%	907301001
R4	PCT, 500 OHM 1/4W	907920102
R5	RESISTOR,MET FILM 18.2K OHM 1% 108W	907301822
R6	RESISTOR,MET FILM 29.4K OHM 1% 1/8W	907302942
R7	RESISTOR,MET FILM 442 OHM 0.1% 1/8W	907704420
R8	RESISTOR,MET FILM 13.7K OHM 0.1% 1/8W	907711372
R9	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R10	RESISTOR,COMP 22M OHM 5% 1/4W	906900226
R11	RESISTOR,COMP 22M OHM 5% 1/4W	906900226
R12	RESISTOR,MET FILM 102K OHM 1% 1/8W	907301023
R13	RESISTOR,MET FILM 24.9 OHM 1% 1/8W	907324R90
R14	RESISTOR,FXD,FILM 1.0K OHM 1/8W 1%	907301001
R15	RESISTOR MET FILM 11.5K OHM 1% 1/8W	907301152
R16	PCT, 500 OHM 1/4W	907920102
R17	RESISTOR,COMP 910 OHM 1/4W 5%	906900911
R18	RESISTOR MET FILM 49.9K OHM 1% 1/8W	907304992
R19	RESISTOR MET FILM 49.9K OHM 1% 1/8W	907304992
R20	RESISTOR,MET FILM 69.8K OHM 1/8W 1%	907306982
R21	PCT, 20K OHM 10% 1/2W	907930203
R22	RESISTOR,MET FILM 22.6K OHM 1/8W	907302262
R23	RESISTOR,MET FILM 28.0K OHM 1/8W	907302802
R24	RESISTOR,MET FILM 158K OHM 1/8W 1%	907301583
R25	PCTENTIOMETER,50K OHM	907920503
R26	RESISTOR,FILM,METAL,27.4K OHM,1/8W,1%	907302742
R27	RESISTOR MET FILM 22.1K OHM 1% 1/8W	907302212
R28	RESISTOR,MET FILM 115K OHM 108W 1%	907301153
R29	PCTENTIOMETER,50K OHM	907920503
R30	RESISTOR,MET FILM 442 OHM 0.1% 1/8W	907704420
R31	RESISTOR,MET FILM 13.7K OHM 0.1% 1/8W	907711372
R32	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R33	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R34	RESISTOR COMP, 1 MEG,OHM,1/4W 5%	906900105
R35	RESISTOR MET FILM 24.9K OHM 1% 1/8W	907302492
R36	RESISTOR,MET FILM 20.5K OHM 1% 1/8W	907302052
R37	RESISTOR,MET FILM,45.3K OHM 1/8W 1%	907304532
R38	RESISTOR,MET FILM 47.5K OHM 1/8W 1%	907304752
R39	RESISTOR,MET FILM 90.9K OHM 1/8W 1%	907309092
R40	RESISTOR,MET FILM 37.4K OHM 1/8W	907303742
R41	RESISTOR,MET FILM 28.0K OHM 1/8W	907302802
R42	RESISTOR MET FILM 61.9K OHM 1% 1/8W	907306192
R43	RESISTOR MET FILM 9.31K OHM 1% 1/8W	907309311
R44	RESISTOR MET FILM 30.9K OHM 1% 1/8W	907303092
R45	RESISTOR,FILM,METAL,4.99K OHM,1/8W,1%	907304991
R46	RESISTOR MET FILM 24.3K OHM 1% 1/8W	907302432
R47	RESISTOR,MET FILM 78.7K OHM 1% 1/8W	907307872
R48	RESISTOR MET FILM 23.2K OHM 1% 1/8W	907302322
R49	RESISTOR MET FILM 60.4K OHM 1% 1/8W	907306042
R50	RESISTOR MET FILM 100K OHM 1% 1/8W	907301003
R51	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100

THIS DRAWING AND SPECIFICATIONS SHOWN SHALL NOT BE COPIED OR USED WITHOUT WRITTEN CONSENT OF LEAR SIEGLER, INC. SIERRA ELECTRONIC DIVISION

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



QTY	QTY	QTY	QTY	ITEM NO.	PART OR IDENTIFYING NO.	DESCRIPTION OR NOMENCLATURE	MATERIAL	SPEC OR NOTE
						LIST OF MATERIAL OR PARTS LIST		

ALL THREADS UNIFIED SERIES, EXTERNAL THREADS TO BE CLASS 2A, INTERNAL THREADS TO BE CLASS 7B AFTER PLATING, UNLESS OTHERWISE SPECIFIED

63 FINISH ON ALL MACHINED SURFACES UNLESS OTHERWISE SPECIFIED. REMOVE ALL BURRS AND SHARP EDGES UNLESS OTHERWISE SPECIFIED

DO NOT SCALE DWG.

DIMENSIONS ARE IN INCHES AND INCLUDE PLATING THICKNESS UNLESS OTHERWISE SPECIFIED

TOLERANCE UNLESS SPECIFIED

	TWO PLACE	THREE PLACE
BASIC	= .02	= —
UP TO 6	= .02	= —
6 TO 24	= .03	= —
ABOVE 24	= .06	= —
ANGULAR DIMENSION	= °	

FINISH:

Sierra

LEAR SIEGLER INC SIERRA ELECTRONIC DIVISION

CODE IDENT. NO. 54778

SCHEMATIC DIAGRAM A2 SIGNAL BOARD

REF		808A-11
ASSY OR ITEM	QTY NEXT	NEXT ASSY.
		APPLICATION

MODEL NO.

DATE — BY —

SIZE D | DRAWING NO. D03320300 | REV B

SCALE — | STOCK AS — | SHEET 2 OF 2

DWG NO. D03320300

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	PWB ASSY A3, 808A-11 (Continued)	
R52	RESISTOR COMP 10.0 OHM 5% 1/4W	906900100
S1	SWITCH,12POS 2 POLE 30 DEGREE PWB MTG	911210289
U1	RESISTOR,ISOLATED NETWORK 1K OHM 2% 1/8W	920880102
U2	RESISTOR,ISOLATED NETWORK 470 OHM 2% 1/8W	920880471
U3	IC,CD4052BE,4 CHANNEL MULTIPLEXER	920204052
U4	RESISTOR,ISOLATED NETWORK 100K OHM 1% 1/8W	920816104
U5	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U6	IC,MC14051B,ANALOG MULTIPLEXR/DEMULTIPLEXER	920214051
U7	IC,MC14053,MULTIPLEXER	920204053
U8	IC,LM318N,OPERATIONAL AMP	920310318
U9	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U10	IC,AD7531,MULTIPLYING D/A CONVERTER	920207531
U11	IC,LM318N,OPERATIONAL AMP	920310318
U12	RESISTOR,ISOLATED NETWORK 4.7K OHM 2% 0.2W	920880472
U13	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U14	RESISTOR,ISOLATED NETWORK 4.7K OHM 2% 0.2W	920880472
U15	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U16	IC,MC14053,MULTIPLEXER	920204053
U17	IC,LM318N,OPERATIONAL AMP	920310318
U18	IC,TL084C,QUAD J-FET INPUT OPERATIONAL AMP	920310084
U19	IC,TL082,DUAL J-FET INPUT OPERATIONAL AMP	920310082

REF DESIG	DESCRIPTION	SIERRA PART NUMBER
	ACCESSORIES & MISCELLANEOUS	
	BATTERY PACK, WELDED NI-CAD RECHARGEABLE	918500018
	BATTERY CHARGER, EXTERNAL ,115 VAC	917300453
	BATTERY CHARGER, EXTERNAL, 230 VAC	917300463
	CONNECTOR, SPEAKER HARNESS	914800250
	KNOB, FUNCTION CONTROL	922000005
	ASSY, BELT LOOP PLATE	C03318400
	OPERATING INSTRUCTIONS LABEL, 808A	919500519
	OPERATING INSTRUCTIONS LABEL, 808A, CONT'D	919500520
	PATCH CORD, CAPTIVE, 808A,B	916400114
	ASSY, PATCH CABLE, 808A-11	C03319100
	FRONT PANEL OVERLAY, 808A-11	919500523
	OPERATING INSTRUCTIONS LABEL, 808B	919500543
	OPERATING INSTRUCTIONS LABEL, 808B, CONT'D	919500542
	FRONT PANEL INLAY, 808A	919500516
	FRONT PANEL INLAY, 808B	919500544

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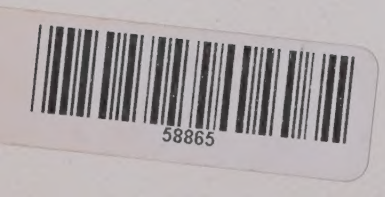
CHANGE NOTICE SUMMARY

Revision	Reason for Change	Date of Change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